ORDER NO. VRD0202004C2

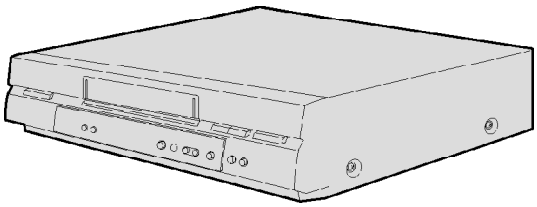
Service Manual

Video Cassette Recorder

Panasonic VHS Hi-Fi PAL

NV-FJ623EG / NV-FJ623EGY / NV-FJ628EE

Z-MECHANISM



SPECIFICATIONS

SPECIFICATIONS

ITEM	SPECIFICATION		ITEM	SPECIFICATION
POWER	SOURCE: 220-240 V AC 50/60 Hz		AUDIO	HEAD: 1 Stationary head (Normal-mono only) 2 channels (Hi-Fi Sound-Stereo)
	CONSUMPTION: 18 watts COMSUMPTION WHEN IN STANDBY MODE: Approx. 3W			INPUT: EURO AV (AV1) Connector (21 pin) More than -6dBV (500 mV), 10 kΩ
RECORDING SYSTEM	2 rotary heads, helical scanning system			OUTPUT: EURO AV (AV1) Connector (21 pin) -6 dBV (500mV), Less than 1kΩ
	PAL		TAPE SPEED	SP: 23.39 mm/s LP:11.695 mm/s EP: 7.796 mm/s Record/Playback Time: SP:4 hours with 240 min. type tape LP: 8 hours with 240 min. type tape EP:12 hours with 240min type tape FF/REW Time: 60 sec. with 180 min. type tape
TV TUNER SYSTEM	NV-FJ623EG/EGY	VHF: CHE2-CHE12 CHA-CHH2 [ITALY] (PAL/SECAM B) UHF: CH21-CH69 (PAL/SECAM G) CATV: CHS01-CHS41 (PAL/SECAM B)	OPERATING TEMPERATURE	5˚C - 40˚C
	NV-FJ628EE	VHF: CHE2-CHE12 (PAL/SECAM B) CHR1-CHR12 (SECAM D) UHF: CH21-CH69 (PAL/SECAM G, SECAM K, PAL I) CATV: CHS01-CHS41 (PAL/SECAM B) 44MHz-470MHz (SECAM B)	OPERATING HUMIDITY	35% - 80%
RF OUT SYSTEM	NV-FJ623EG/EGY	UHF: CH21-CH69 (PAL/SECAM G) 71 + 3 dBμ, 75 Ω close	DIMENSIONS	430 (W)×87(H)×282(D) mm
	NV-FJ628EE	UHF: CH21-CH69 (PAL/SECAM G, SECAM K, PAL I) 71 ± 3 dBμ, 75 Ω close	WEIGHT	3.5 kg
VIDEO	HEADS: 4 rotary heads 1 pair for recording and playback (L-R heads) 1 pair for trick play (L'-R' heads)		STANDARD ACCESSORIES	1 pc. DIN-RF Cable 1 pc. AC Mains Lead 1 pc. Infra-red Remote Controller
	INPUT: EURO AV (AV1) Connector (21 pin) 1.0 Vp-p, 75 Ω terminated			
	OUTPUT: EURO AV (AV1) Connector (21 pin) 1.0 Vp-p, 75 Ω terminated			

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

Panasonic

1. INTRODUCTION

This service manual contains technical information which will allow service personnel to understand and service this model.
If the circuit is changed or modified, this information will be followed by supplementary service manual to be filed with original service manual.

Note:

1. **Adjustment procedures, Disassembly Procedures and Assembly Procedures for Mechanism Chassis are separate volume from this service manual. / Please refer to the service manual for Z-Mechanism Chassis. (Order No. VRD9802005C2)**
2. **The Model No. is indicated on the Schematic Diagram and Circuit Board Diagrams as follows.**

Model No.	Indication Mark
NV-FJ623EG	(EG)
NV-FJ623EGY	(EGY)
NV-FJ628EE	(EE)

2. GENERAL DESCRIPTIONS

2.1. SERVICE CAUTION

2.1.1. REPLACING IC7702/EEPROM

When the EEPROM: IC7702 is replaced, applicable model code, option code and electrical adjustment data will not be available.
Therefore, enter and/or adjust the necessary data after replacing IC7702 by referring following procedure.

STEP1.REPLACE THE IC7702

1. **Remove the C.B.A. with Mechanism unit by referring the Disassembly procedure.**
2. **Disconnect the AC plug and replace the IC7702.**

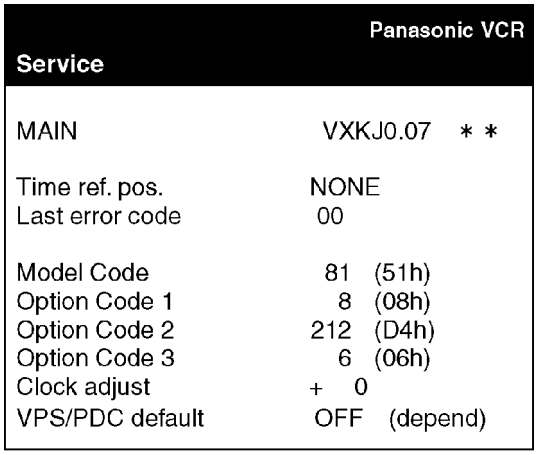
STEP2.INPUT THE MODEL & OPTION CODE

1. **Set up the applicable model code and option code by ordering the**

following table.

PROCEDURE	F.I.P. DISPLAY
Turn on the Service Mode **1.Press the FF key and the EJECT key simultaneously for more than 3 seconds.**	
Activate the Service Mode 2 **2.While keep placing FF key, press the EJECT key in twice.**	
Activate the Entering Mode. **3.Press the EJECT key for more than 3 seconds.**	
Set the Mode 2. **4.Press the CH UP key in twice.**	
Display the Setting Code. **5.Press the POWER Button to turn the power on.**	 **(Colon starts flashing)**
Enter the Model and Option Code. **6.Service Screen is displayed on the monitor.** **7.Set the applicable Model and Option code by using REW, PLAY, STOP and FF keys on theRemote Controller. (See Fig.S1 & S2)**	
Exit from Service Mode. **8.Press the POWER Button to turn the power off.** **9. Press FF and EJECT keys simultaneously in 6 times.**	 **(Normal Indication)**

Fig.S1 Service Secreen (sample)



Model No.	Model Code	Option Code 1	Option Code 2	Option Code 3
NV-FJ623EG/EGY	65 (41h)	125 (7Dh)	196 (C4h)	6 (6h)
NV-FJ628EE	70 (46h)	121 (79h)	196 (C4h)	6 (6h)

Fig. S2 Model Code & Option Code

NOTE:
Since all electrical adjustments data is still not available, perform the Electrical Adjustment continuously.

2.1.2. CYLINDER UNIT REPLACEMENT

1. CYLINDER UNIT REPLACEMENT

A. Remove the mechanism unit from MAIN C.B.A./Chassis by referring “SECTION 2. Disassembly Procedure”.

B. Remove the 3 screws (A) of the CYLINDER UNIT with a screw driver.

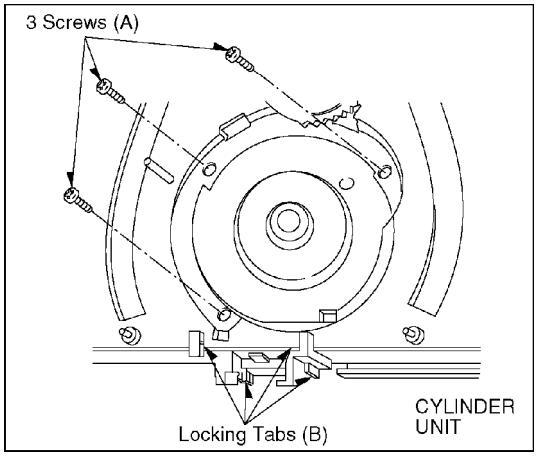
C. Unlock the 4 locking tabs (B) and disconnect the Cylinder flexible card from the FPC Holder.

D. Remove the CYLINDER UNIT.

CAUTION:

Handle the Cylinder flexible card with care. When it damaged, you should replace whole Cylinder unit.

Fig. S3



2. UPPER CYLINDER DISASSEMBLY

A. Remove 2 screws (A).

B. Remove the Cylinder Stator Unit.

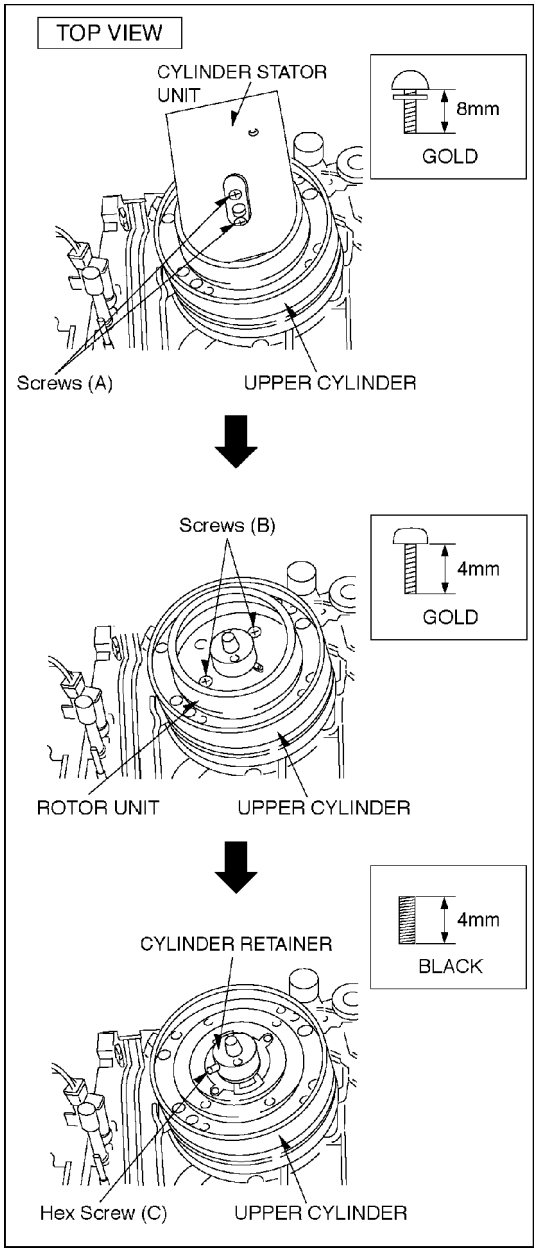
C. Remove 2 screws (B).

D. Remove the Cylinder Rotor Unit.

E. Loose Hex screw (C) (1.5 mm) and remove the CYLINDER RETAINER.

F. Remove the Upper Cylinder.

Fig. S4



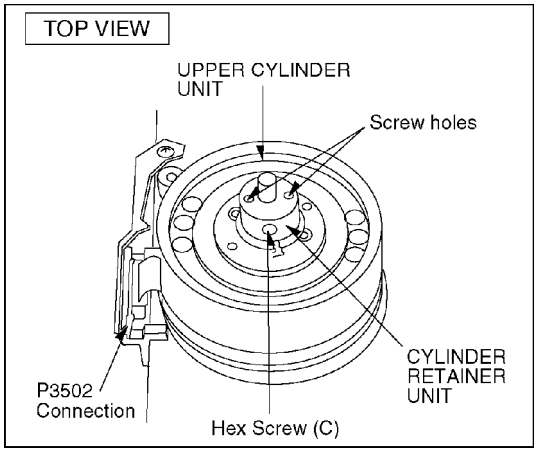
3. UPPER CYLINDER ASSEMBLY

When reassembling, perform the steps in the reverse order.

Notes:

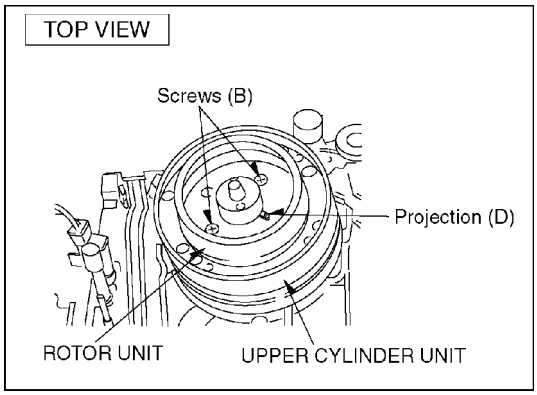
1. **Install the Cylinder Retainer so that the 2 holes on top of the Cylinder Retainer are at right angles with the P3502 Connection.**
2. **Tighten the Hex screw (C) (1.5 mm) while pressing down on top of the Cylinder Retainer.**

Fig. S5



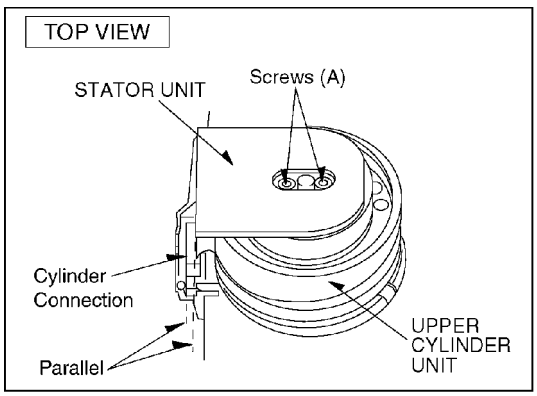
3. **Install the Cylinder Rotor Unit so that the inner hole of the Cylinder Rotor Unit fits to the small projection (D) on top of the Upper Cylinder.**
4. **Tighten 2 screws (B).**

Fig. S6



5. **install the Cylinder Stator Unit.**
6. **Tighten 2 screws (A).**

Fig. S7



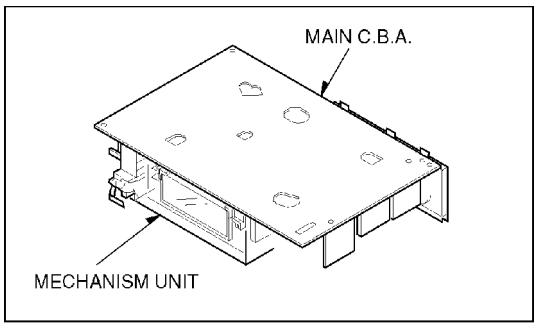
7. **Confirm the PG SHIFTER ADJUSTMENT with the alignment tape**

(PAL: VFJ8125H3F) and adjust it if necessary.

2.1.3. CHECKING OF MAIN C.B.A.

When servicing the MAIN C.B.A., take out the MAIN C.B.A. and mechanism from the frame and turn over.

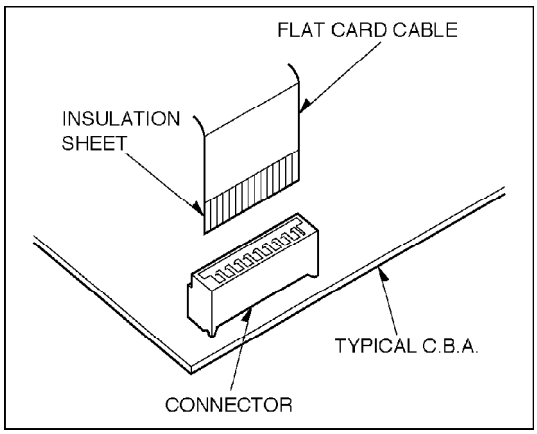
Fig. S8



2.1.4. FLAT CARD CABLE INSTALLATION

When installing the Flat Card Cable on the connector, install the Flat Card Cable with the cable contacts facing the connector contacts.

Fig. S9



2.2. REMOVAL OF CASSETTE TAPE

There are 2 ways to remove a cassette tape.

1. Service Information Display Operation

A. Press the FF and EJECT keys simultaneosly for 3 seconds and set the Service Mode 7.

B. Press STOP key in order to rotate the Loading Motor for unloading operation. (Pay an attention of tape slack)

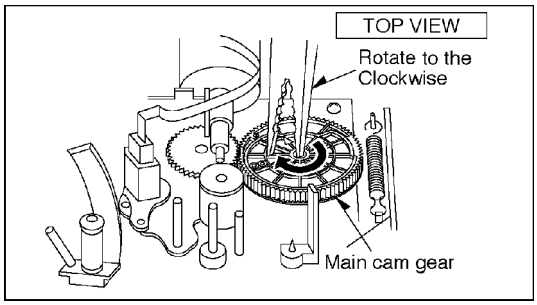
2. Manual Operation

A. Disconnect the AC Mains Lead and remove the Top Panel.

B. Rotate the Main Cam Gear clockwise until the Loading Posts

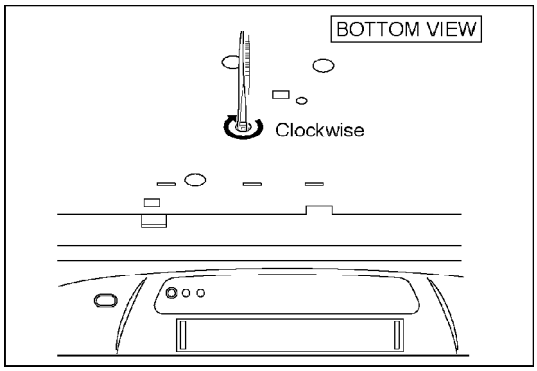
move to fully unloaded position as shown in Fig. S10 . (Tape is remaining)

Fig. S10



C. Rotate the Capstan Motor clockwise from the bottom side to take up the tape.

Fig. S11



D. Rotate the Main Cam Gear clockwise until the cassette tape is ejected.

2.3. INTRODUCTION OF VIDEO HEAD CLEANING CASSETTE / (POLISHING TYPE)

1. **We are pleased to introduce Panasonic Video Head Cleaning Cassette, VFK0923FT [for service purposes] and VFK0923FSE [for end users] for all VHS/SVHS VCP and VCR.**
2. **These cleaning cassettes are exclusive removing the hard and sticky clogging on video heads.**
3. **These improve the efficiency of video head cleaning service and shortening cleaning time for end users.**

VFK0923FT (For Service usage)	
Type of Cassette	**Full VHS Cassette**
Cleaning Time	**10 Seconds/Time**
Tape Length	**20 m**
Usability in a Path	**180 Times**

VFK0823FSE (For end users)	
Type of Cassette	**Full VHS Cassette**
Cleaning Time	**10 Seconds/Time**
Tape Length	**3.34 m**
Usability in a Path	**30 Times**

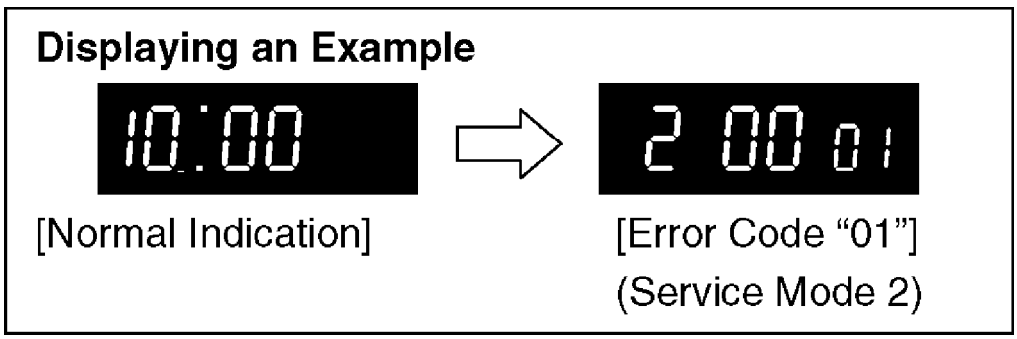
VFK0823FSE (For end users)

Note:

The tape material itself is the same in both types.

2.4. SELF-DIAGNOSIS RESULT DISPLAY

The "SELF-DIAGNOSIS RESULT DISPLAY & MEMORY function is built in this VTR.
It means that when the VCR detects undesirable condition, it can be displayed a “Error code (Two numbers from the right)” with Service Mode 2.
Since the "Error code" is stored in the EEPROM, it can be displayed although after disconnected the AC leads. It can be displayed with Service Mode 2.
(If a second error had been detected, only the most recent error is displayed.)
For more details, refer to the Service Manual for Z-Mechanism Chassis Order number VRD9802005C2.



INDICATION	CAUSE	REMEDY/CHECK
01	After cylinder lock is detected, the cylinder does not start rotating again even after tape unloading.	Check the cylinder motor drive circui
02	Cassette tape is not wound up during the tape unloading except EJECT mode.	Check the capstan motor drive circui
03	Mechanism locks during mode transition except EJECT mode.	1. Check the loading motor drive circuit. 2. Check the mechanism phase alignment. 3. Check the mode switch.
04	Mechanism locks during tape unloading.	1. Check the loading motor drive circuit. 2. Check the mechanism phase alignment.
06	Mechanism locks after tape unloading in EJECT mode.	1. Check the loading motor drive circuit. 2. Check the mechanism phase alignment for cass
07	During recording mode, recording signal is less than the normal condition.	Protection of the over-current flowin transistor which produces the power for recording mode.
08	Recording circuit works except recording mode.	Check the recording circuit.
16	Cylinder lock detection.	Check the cylinder unit and the cylin drive circuit.
17	Supply reel mechanism lock detection	Check the supply reel mechanism an supply reel circuit.
18	Take-up reel mechanism lock detection	Check the Take-up reel mechanism a Take-up reel circuit.
2*	PG shifter automatic adjustment error.	Check the servo/system control circu cylinder unit.

Fig. T1 Self-Test indication Display

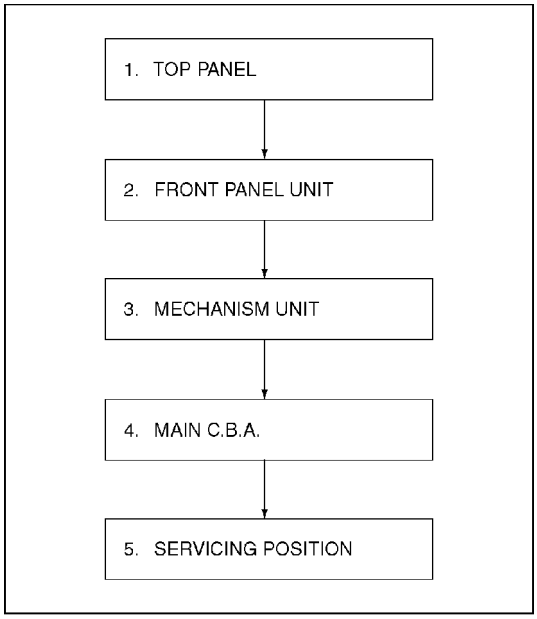
3. ADJUSTMENT PROCEDURES

3.1. DISASSEMBLY METHOD

3.1.1. DISASSEMBLY FLOW CHART

This flow chart indicates disassembly steps of the cabinet parts and the circuit boards in order to find the necessary items for servicing.
When reassembling, perform the steps in the reverse order.

Fig. D1

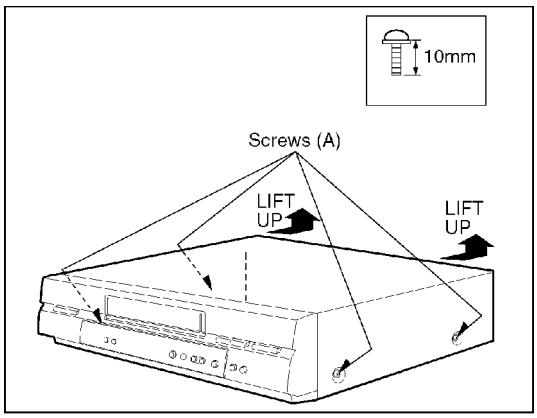


3.1.2. DETAIL OF DISASSEMBLY METHOD

1. REMOVAL OF THE TOP PANEL

Remove	**4 Screws (A)**

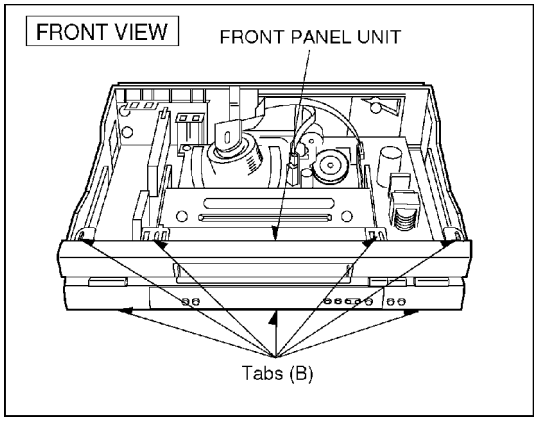
Fig.D2



2. REMOVAL OF THE FRONT PANEL UNIT

Unlock	**7 Tabs (B)**

Fig. D3



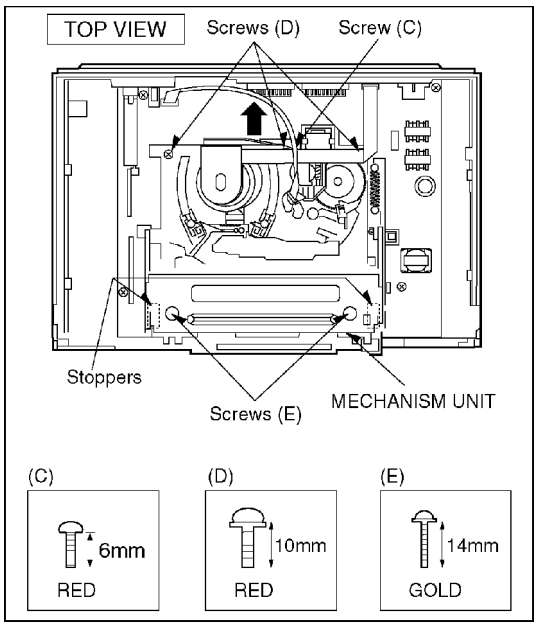
3. REMOVAL OF THE MECHANISM UNIT

Remove	**Screw (C)**
Remove	**3 Screws (D)**
Remove	**2 Screws (E)**

Note:

1. **Keep pressing 2 stoppers on Cassette Holder Plate and Press Cassette Holder Plate to the rear.**
2. **Remove the Mechanism Unit after bend the Cylinder Shield in the direction of the arrow.**

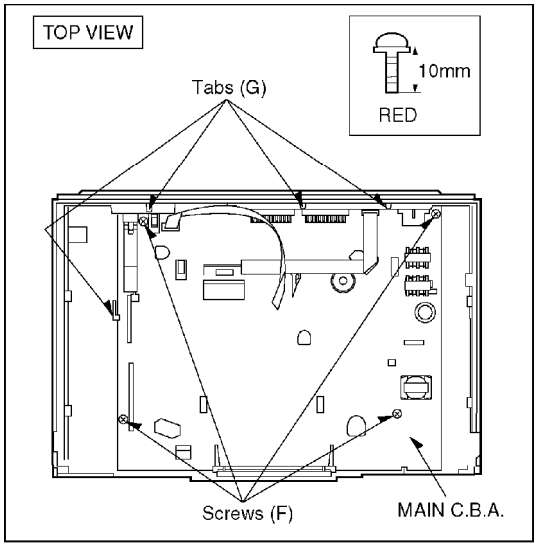
Fig. D4



4. REMOVAL OF THE MAIN C.B.A.

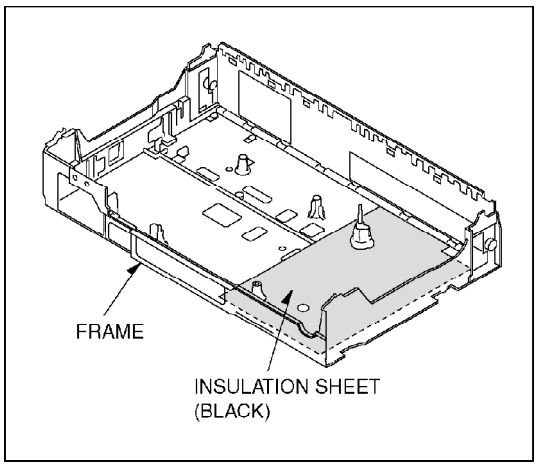
Remove	**4 Screws (F)**
Unlock	**4 Tabs (G)**

Fig. D5



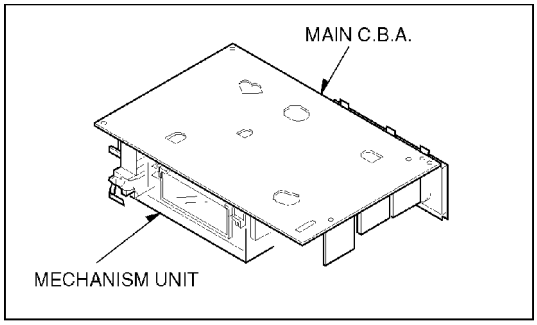
NOTE:
Before mounting the MAIN C.B.A. onto the frame, be sure to confirm that the insulation sheet is mounted on the frame as shown in Fig. D6 .

Fig. D6



5. SERVICING POSITION

Fig. D7



3.2. MECHANICAL ADJUSTMENT PROCEDURES

Refer to the Service Manual for Z-Mechanism Chassis. / (Order No. VRD9802005C2)

3.3. ELECTRICAL ADJUSTMENT PROCEDURES

3.3.1. TEST EQUIPMENT

The following equipments are required for Electrical Adjustments.

1. Dual-Trace Oscilloscope
   - Voltage Range: 0.005-5V/div
   - Frequency Range: DC-35MHz
   - Probes: 10:1 / 1:1
2. Frequency Counter
   - Frequency Range: 0-10MHz
   - Probes: 1:1
3. Universal Counter
4. Digital Volt Meter (D.V.M.)
5. Video Sweep Generator
6. Sinewave Generator
7. Video Pattern Generator
8. Monitor TV
9. DC Power Supply
10. VHS Blank Tape
11. VHS Alignment Tape
    - Parts No.: VFJ8125H3F(PAL)

3.3.2. VCR SETTING

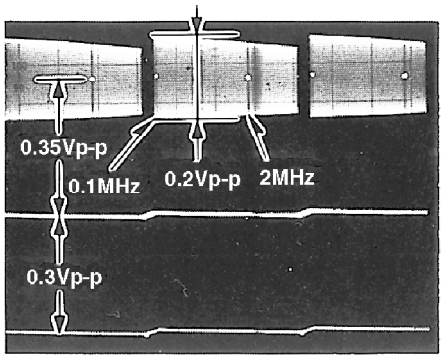
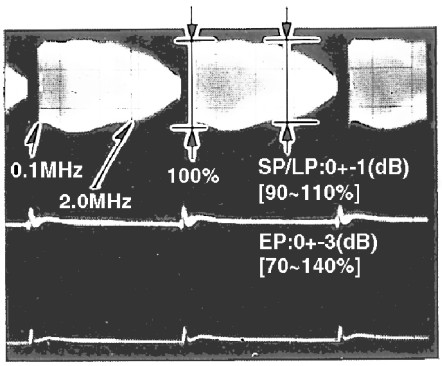
When no indication in the procedure, set each selector as follows.

1. TAPE SPEED: SP

2. CHANNEL: AV1
(Set to signal input terminal number)

3.3.3. ADJUSTMENTS

ITEM	TP	ADJ.	MODE	INPUT	TAPE	M. EQ.	SPEC.	REMARKS
PG SHIFTER ADJUSTMENT	---	---	PLAYBACK	---	ALIGNMENT TAPE (PAL)	---	---	Refer to procedure of PG SHIFTER ADJUSTMENT as shown in Fig.E3.
AI FUNCTION ADJUSTMENT	---	---	PLAYBACK (SELF-REC)	PAL COLOUR BAR	BLANK TAPE	---	---	Refer to the procedure of AI FUNCTION ADJUSTMENT as shown in Fig.E4.
VIDEO FREQUENCY RESPONSE ADJUSTMENT	VIDEO OUT	---	SP/LP/EP PLAYBACK (SELF-REC)	VIDEO SWEEP (See Fig.E1)	BLANK TAPE	OSCILLO SCOPE/ VIDEO SWEEP GENERAT OR	SP: 0+-1 (dB) (90~110%) LP: 0+-1 (dB) (90~110%) EP: 0+-3 (dB) (70~140%) (See Fig. E2)	Refer to the procedure of VIDEO FREQUENCY RESPONSE ADJUSTMENT as shown in Fig. E5.

Fig.E1	Fig.E2	
		
CONDITION: BURST SIGNAL OFF / 75 ohm TERMINATED		

3.3.4. PG SHIFTER ADJUSTMENT / (AUTOMATIC)

PROCEDURES	FIP DISPLAY
Press the FF and EJECT Keys simultaneously for 3 seconds.	
Press the FF and EJECT Keys simultaneously twice.	
Press the EJECT key for 3 seconds.	
Press the CH UP key once.	
Insert the Alignment cassette tape. (PAL:VFJ8125H3F)	
When the sequence of the automatical adjustment has been terminated, the following action has been made. *SUCCEED: The cassette tape is ejected. *ERROR : The "F2"is displayed on the FIP. (Check the Servo/Syscon circuit and Cylinder unit.)	
Release the Service mode by pressing the EJECT and FF keys simultaneously in 6 times until the FIP becomes normal indication.	

Fig. E3

3.3.5. AI FUNCTION ADJUSTMENT (AUTOMATIC)

PROCEDURES	FIP DISPLAY
Press the FF and EJECT Keys simultaneously for 3 seconds.	
Press the FF and EJECT Keys simultaneously twice.	
Press the EJECT key for 3 seconds.	
Press the CH UP key in 3 times.	
Insert the blank cassette tape. (The adjustment is automatically started.)	
When the sequence of the automatical adjustment has been terminated successfully, the VCR goes to STOP mode.	
Release the Service mode by pressing the EJECT and FF keys simultaneously in 6 times until the FIP becomes normal indication.	

Fig. E4

3.3.6. VIDEO FREQUENCY RESPONSE ADJUSTMENT

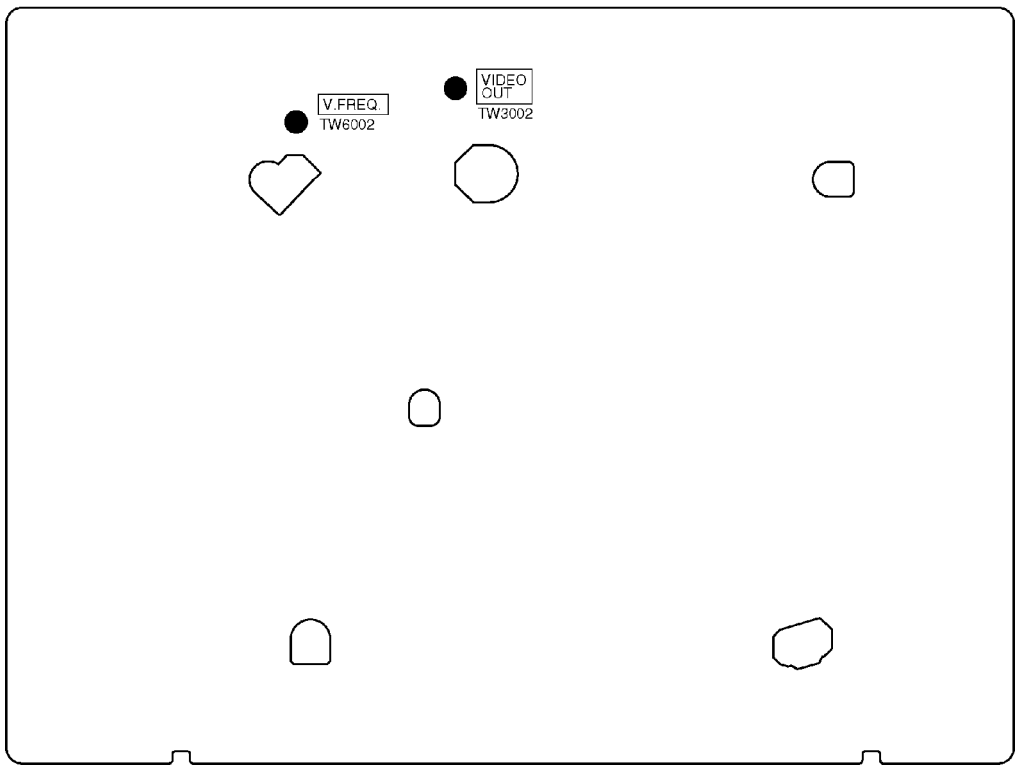
PROCEDURES	FIP DISPLAY
Input the Video sweep signal. (See Fig.E1)	
Press the FF and EJECT Keys simultaneously for 3 seconds.	
Press the FF and EJECT Keys simultaneously twice.	
Press the EJECT key for 3 seconds.	
Press the CH UP and/or CH DOWN key until "11" is displayed on FIP.	
Insert the Self-recorded tape and playback it. (SP/LP/EP mode)	
Connect the Oscilloscope to: *CH1....Video Out (TW3002). *CH2....V.FREQ.(TW6002)	

PROCEDURES	FIP DISPLAY
Press the "4" key on the remote controller. (Confirm that TW6002 becomes high(5V)).	
Adjust the Frequency response by pressing the "2"(increase) and/or "8"(decrease) key on the Remote Controller. (See Fig.E2)	
Store the Adjusted value by pressing the "5" key on the Remote Controller.	
Release the Service mode by pressing the EJECT and FF keys simultaneously in 6 times until the FIP becomes normal indication.	

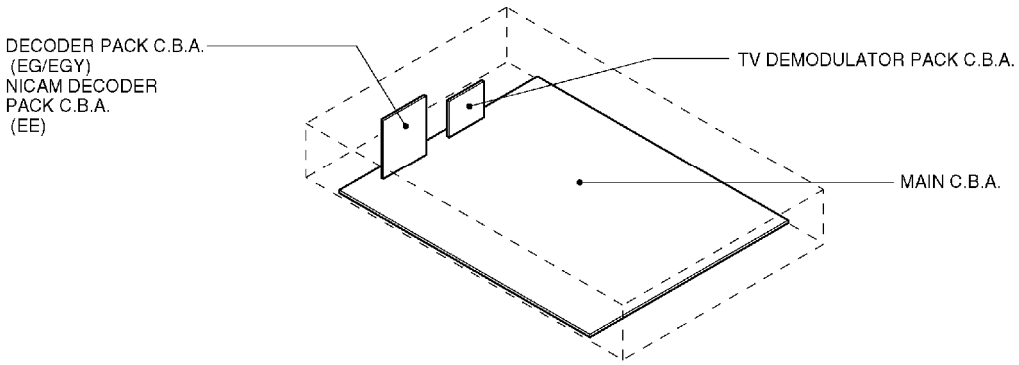
Fig. E5

3.3.7. LOCATION OF TEST POINTS & CONTROLS

MAIN C.B.A.



3.3.8. CIRCUIT BOARD LAYOUT



4. ABBREVIATIONS

5. INPUT/OUTPUT CHART

5.1. INPUT/OUTPUT CHART FOR IC6001

Fig. MP1

Fig. MP2

Fig. MP3

Fig. MP4

5.2. TRUTH TABLE

6. WAVEFORM TABLE & VOLTAGE CHART

6.1. WAVEFORM TABLE

6.2. VOLTAGE CHART

7. BLOCK DIAGRAMS

7.1. SYSTEM CONTROL & SERVO BLOCK DIAGRAM

7.2. LUMINANCE & CHROMINANCE BLOCK DIAGRAM

7.3. AUDIO BLOCK DIAGRAM

8. SCHEMATIC DIAGRAMS

8.1. POWER TRANSFORMER SECTION IN MAIN SCHEMATIC DIAGRAM

8.2. POWER SUPPLY/ RF SECTION IN MAIN SCHEMATIC DIAGRAM

8.3. TIMER SECTION IN MAIN SCHEMATIC DIAGRAM

8.4. SYSTEM CONTROL & SERVO SECTION IN MAIN SCHEMATIC DIAGRAM

8.5. LUMINANCE & CHROMINANCE/ AUDIO SECTION IN MAIN SCHEMATIC DIAGRAM

8.6. Hi-Fi AUDIO SECTION IN MAIN SCHEMATIC DIAGRAM

8.7. INPUT/ OUTPUT SECTION IN MAIN SCHEMATIC DIAGRAM

8.8. TV DEMODULATOR PACK SCHEMATIC DIAGRAM

8.9. DECODER PACK SCHEMATIC DIAGRAM (NV-FJ623EG/EGY)

8.10. NICAM DECODER PACK SCHEMATIC DIAGRAM (NV-FJ628EE)

8.11. CYLINDER STATOR UNIT SCHEMATIC DIAGRAM

8.12. CAPSTAN UNIT SCHEMATIC DIAGRAM

9. CIRCUIT BOARD ASSEMBLIES

9.1. DECODER PACK C.B.A. (NV-FJ623EG/EGY)

9.2. NICAM DECORDER PACK C.B.A. (NV-FJ628EE)

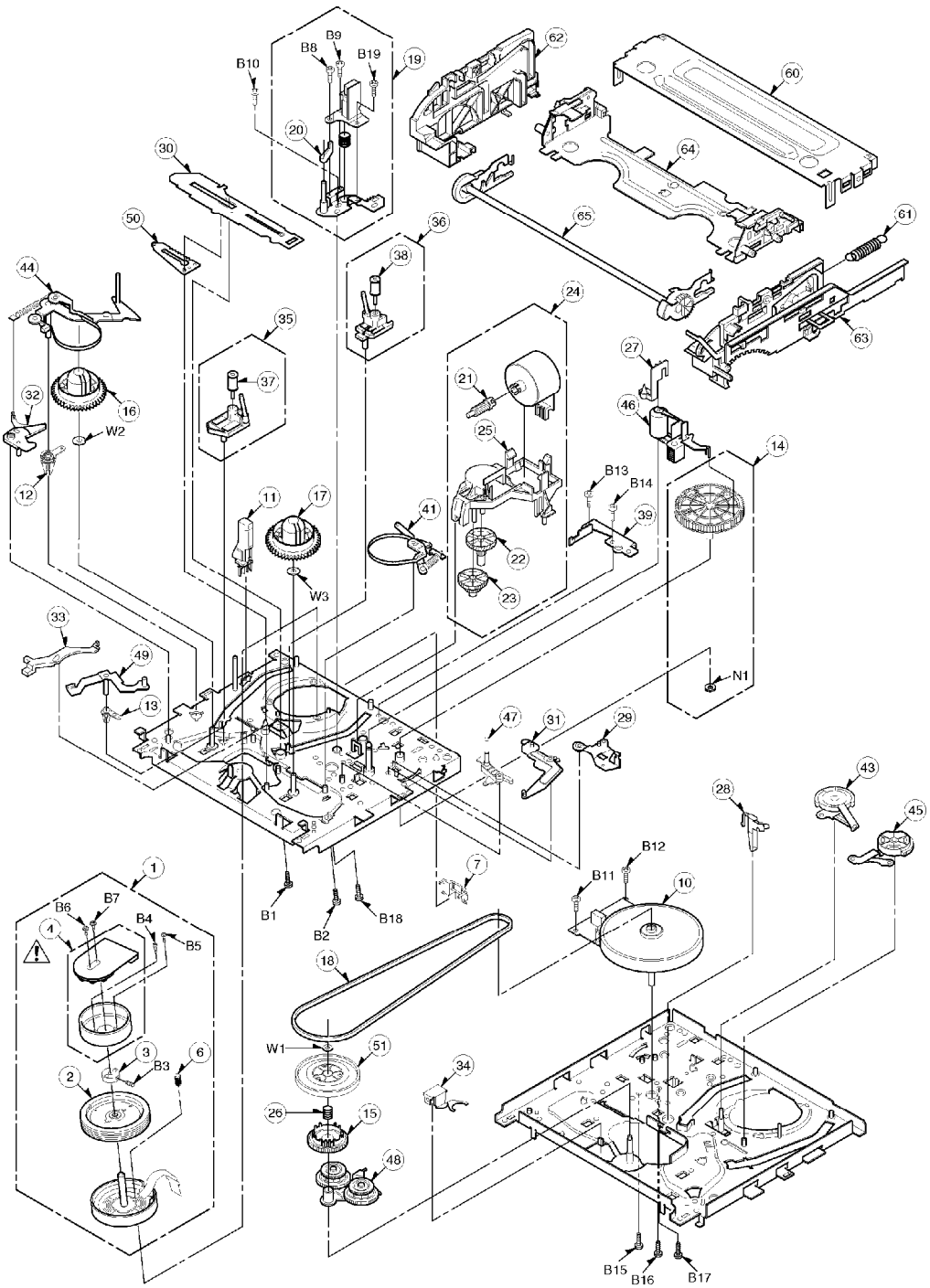
9.3. MAIN C.B.A.

9.4. CYLINDER STATOR UNIT

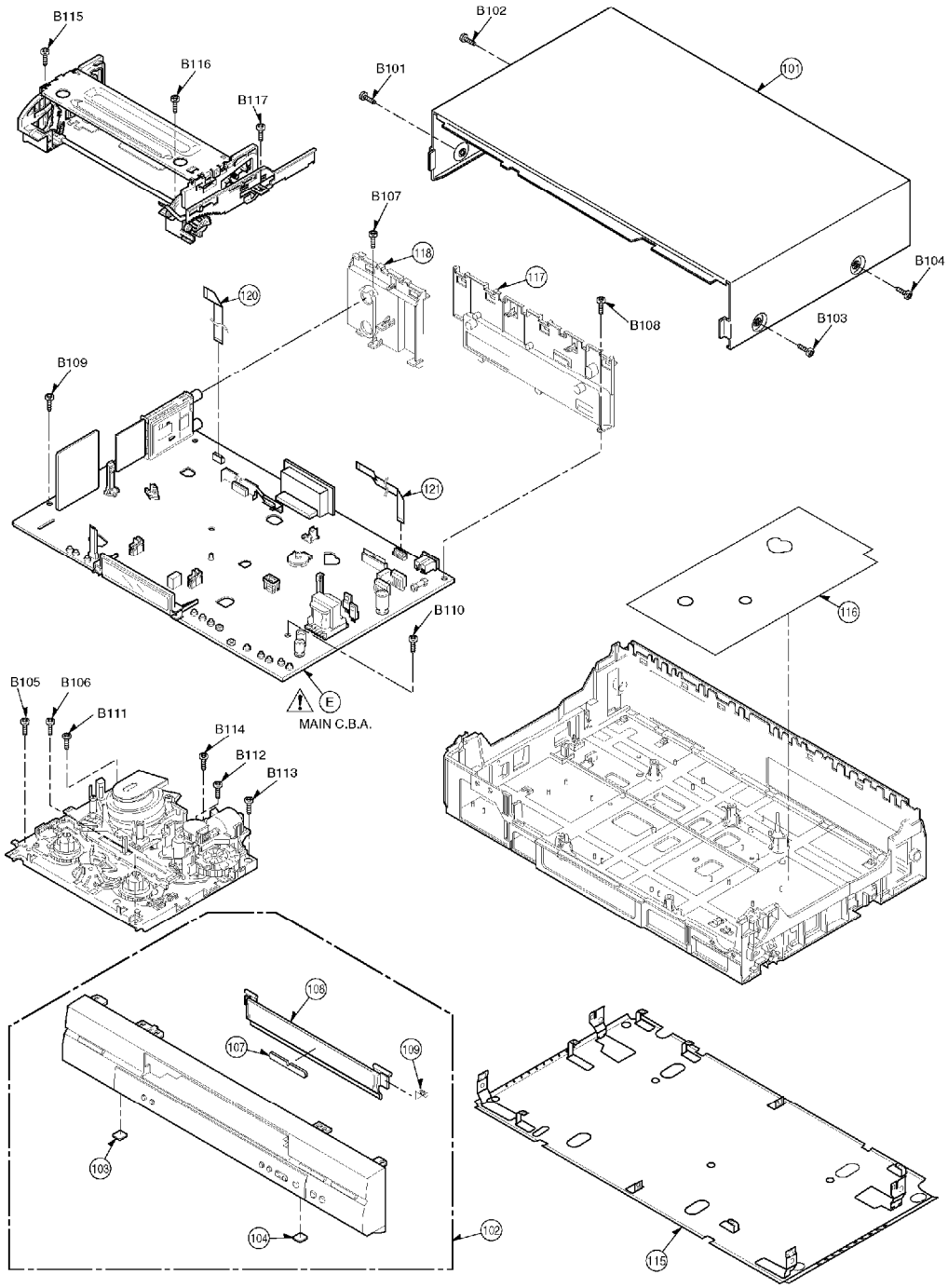
9.5. TV DEMODULATOR PACK C.B.A.

10. EXPLODED VIEWS

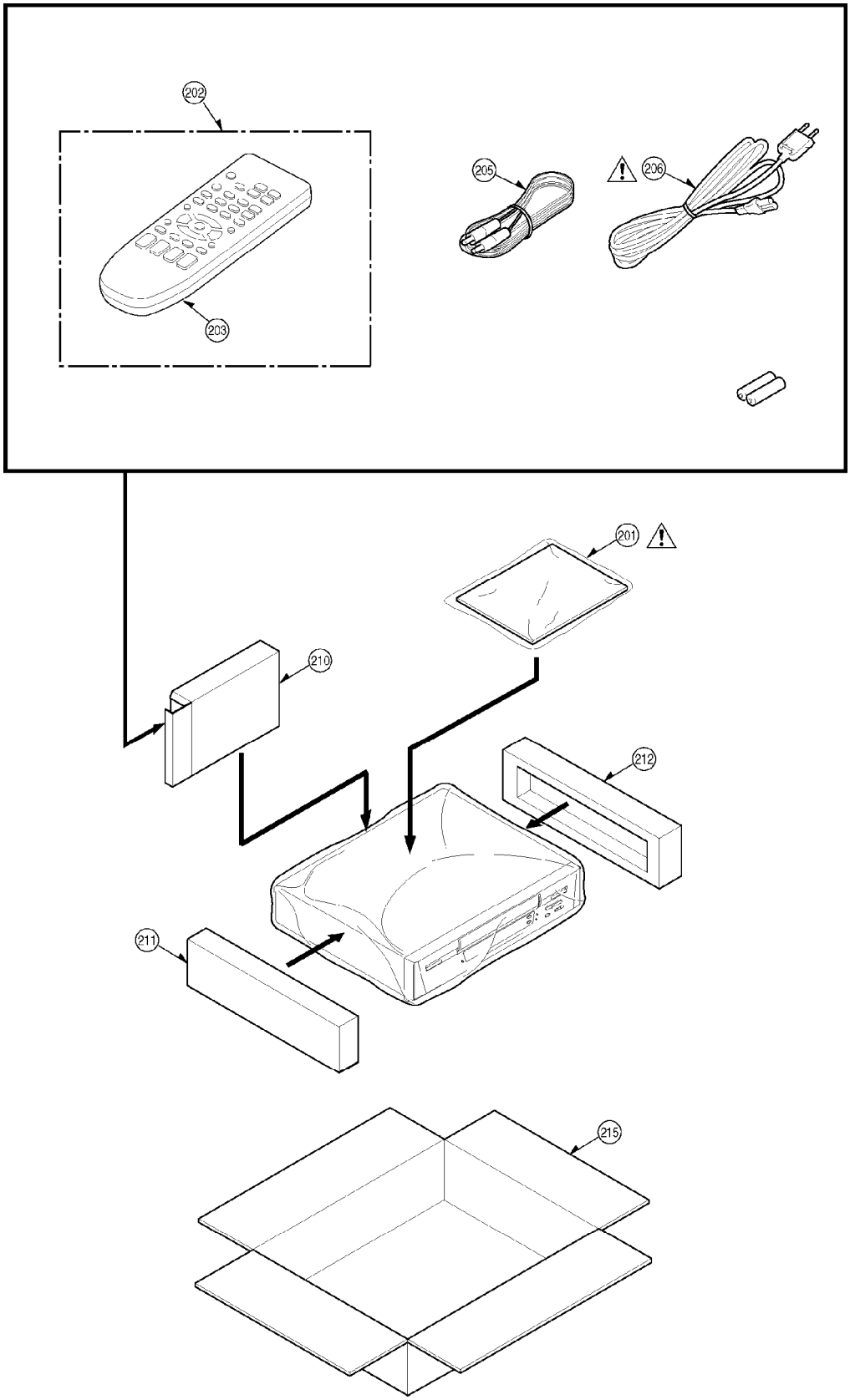
10.1. CHASSIS PARTS SECTION



10.2. CASING PARTS SECTION



10.3. PACKING PARTS SECTION



11. REPLACEMENT PARTS LIST

11.1. CHASSIS PARTS SECTION PARTS LIST

Note: 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark △ have the special characteristics for safety. When replacing any of these components, use only the same type.
3. " [MAVD] " in the Remarks column shows that the parts is/are supplied from MAVD.

Ref. No.	Part No.	Part Name & Description	Remarks
1	VEG1598	CYLINDER UNIT	[MAVD]
2	VXP2170	UPPER CYLINDER UNIT	[MAVD]
3	VDB1256	CYLINDER RETAINER	
4	VEM0715	CYLINDER MOTOR UNIT	⚠
6	VXS0135	EARTH BRUSH UNIT	
7	VMD3795	FLAT CABLE HOLDER	
10	VEK9069	CAPSTAN UNIT	
11	L1AZ00000004	FE HEAD	
12	VDB1431	TENSION ARM BOSS	
13	VDB1460	SUPPLY BRAKE ARM BOSS	
14	VDG1220KIT	MAIN CAM GEAR	
15	VDG1221	CONVERSION GEAR	
16	VDR0350	REEL TABLE	
17	VDR0350	REEL TABLE	
18	VDV0382	CAPSTAN BELT	
19	VED0412	A/C HEAD UNIT	
20	VMX2656	P4 CAP	
21	VDG1217	WORM GEAR	
22	VDG1218	WORM WHEEL GEAR	
23	VDG1219	CENTRE GEAR	
24	VEM0604	LOADING MOTOR UNIT	
25	VMD2619	MOTOR BRACKET	
26	VMB3045	CONVERSION GEAR SPRING	
27	VMD2620	OPENER PIECE	
28	VMD2738	LED PRISM	
29	VML3165	DRIVE RACK ARM	
30	VML3166	MAIN LEVER	
31	VML3167	DRIVE MAIN LEVER ARM	
32	VML3172	SUPPLY SPRING ARM	
33	VML3176	CONVERSION LEVER A	
34	VML3177	CONVERSION LEVER B	
35	VXA6040	INCLINED BASE (S) UNIT	
36	VXA5854	INCLINED BASE (T) UNIT	
37	VXP1891	ROLLER POST	
38	VXP1891	ROLLER POST	
39	VMA9672	SUPPORT ANGLE	
41	VXL2667	TAKE UP BRAKE ARM UNIT	
43	VXL2670	TAKE UP LOADING ARM UNIT	
44	VXL2793	TENSION ARM UNIT	
45	VXL2672	SUPPLY LOADING ARM UNIT	
46	VXL2785	PINCH ARM UNIT	
47	VXL2996	P5 ARM UNIT	
48	VXL2792	IDLER ARM UNIT	
49	VXL2733	SUPPLY BRAKE ARM UNIT	
50	VXL2747	LOADING RACK UNIT	
51	VXP2035	CENTRE CLUTCH UNIT	
60	VMA9516	TOP PLATE	
61	VMB3047	CONNECTION SPRING	

Ref. No.	Part No.	Part Name & Description	Remarks
62	VMD3379	SIDE PLATE (L)	
63	VXA6540	SIDE PLATE (R) UNIT	
64	VXA5746	CASSETTE HOLDER UNIT	
65	VXP1730	MAIN SHAFT UNIT	
B1	VHD1118	SCREW	
B2	VHD1118	SCREW	
B3	VHD0842	SCREW	
B4	VHD0843	SCREW	
B5	VHD0843	SCREW	
B6	VHD0844	SCREW	
B7	VHD0844	SCREW	
B8	VHD1066	SCREW	
B9	VHD1066	SCREW	
B10	VHD1044	SCREW	
B11	VHD1060	SCREW	
B12	VHD1071	SCREW	
B13	XTS26+6F	SCREW	
B14	XTN26+6F	SCREW	
B15	XTN26+7J	SCREW	
B16	XTN26+7J	SCREW	
B17	XTN26+7J	SCREW	
B18	VHD1095	SCREW	
B19	VHD1185	SCREW	
N1	VHN0311	PUSH NUT	
W1	VMX2208	WASHER	
W2	VMX3022	WASHER	
W3	VMX3022	WASHER	

11.2. CASING PARTS SECTION PARTS LIST

Note: 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark △ have the special characteristics for safety. When replacing any of these components, use only the same type.
3. " [MAVD] " in the Remarks column shows that the parts is/are supplied from MAVD.

Ref. No.	Part No.	Part Name & Description	Remarks
101	VGM1834	TOP PANEL	[MAVD]
102	VYP8350	FRONT PANEL UNIT	[MAVD] NV-FJ623EG-S
102	VYP8406	FRONT PANEL UNIT	[MAVD] NV-FJ623EGYS
102	VYP8360	FRONT PANEL UNIT	[MAVD] NV-FJ628EE-S
103	RKA0072-K	FOOT	
104	RKA0072-K	FOOT	
107	VGB0554	SUPER DRIVE BADGE	
108	VKF3485	BLINDER PANEL	[MAVD]
109	VMB2521	BLINDER SPRING	
115	VKU0575	BOTTOM PLATE	[MAVD]
116	VMZ3099	VO SHEET	[MAVD]
117	VJH1176	AV JACK PLATE	[MAVD]
118	VJH1174	ANT JACK PLATE	[MAVD]
120	VWJ1461	FLAT CARD CABLE (6P)	[MAVD] P4003-A/C HEAD
121	VWJ1282	FLAT CARD CABLE (9P)	[MAVD] P2502-P2901
B101	XTW3+10TFC	SCREW	
B102	XTW3+10TFC	SCREW	
B103	XTW3+10TFC	SCREW	
B104	XTW3+10TFC	SCREW	
B105	VHD0168	SCREW	
B106	VHD0168	SCREW	
B107	VHD1092	SCREW	
B108	VHD1092	SCREW	
B109	VHD1092	SCREW	
B110	VHD1092	SCREW	
B111	VHD1092	SCREW	
B112	VHD1092	SCREW	
B113	VHD1092	SCREW	
B114	XTV26+6JFR	SCREW	[MAVD]
B115	XTV26+8FR	SCREW	
B116	XTV26+8FR	SCREW	
B117	XTV26+8FR	SCREW	

11.3. PACKING PARTS SECTION PARTS LIST

Note: 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark △ have the special characteristics for safety. When replacing any of these components, use only the same type.
3. " [MAVD] " in the Remarks column shows that the parts is/are supplied from MAVD.

Ref. No.	Part No.	Part Name & Description	Remarks
201	VQT9525	OPERATING INSTRUCTIONS (GERMAN)	⚠ [MAVD] NV-FJ623EG-S
201	VQT9840	OPERATING INSTRUCTIONS (ENGLISH/ GERMAN/FRENCH/ITALIAN/DUTCH/ GREEK)	⚠ [MAVD] NV-FJ623EGYS
201	VQT9549	OPERATING INSTRUCTIONS (ENGLISH/ POLISH/CZECHOSLOVAK/HANGARIAN/ RUSSIAN)	⚠ [MAVD] NV-FJ628EE-S
202	N2QAHB000022	REMOTE CONTROLLER	[MAVD]
203	R0185-720010	BATTERY COVER	[MAVD]
205	VJA0728-A	DIN RF CABLE	[MAVD]
206	RJA0043	AC CORD	⚠ [MAVD]
210	VPK2246	ACCESSORIES PACKING	[MAVD]
211	VPN5491	CUSHION (L)	[MAVD]
212	VPN5492	CUSHION (R)	[MAVD]
215	VPG0M10	PACKING	[MAVD]
		SERVICE FIXTURES & TOOLS	
	VFJ8125H3F	VHS ALIGNMENT TAPE (PAL)	
	VFK0335	RETAINING RING REMOVER (3mm/ 4mm)	
	VFK0329	POST ADJUSTMENT SCREWDRIVER	
	VFK0326	HEX WRENCH SET	
	VFK0132	BACK TENSION METER	
	VFK27	HEAD CLEANING STICK	
	VFK1024	MOLYTONE GREASE	
	VFK0330	FINE ADJUSTMENT GEAR DRIVER	
	VFK1301	SILICONE GREASE	
	VFK1298	FLOIL GREASE	

11.4. ELECTRICAL PARTS LIST

Note: 1. Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE: Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components, use only the same type.
3. Unless otherwise specified.
All resistors are in OHMS, K=1,000 OHMS. All capacitors are in MICROFARADS (uf), P=uuF.
4. The P.C. Board units marked width "■" show below the main assembled parts.
5. The marking (RTL) indicaters the retention time is limited for this item.
After the discontinuation of this assembly in production, it will no longer be available.
6. " [MAVD] " in the Remarks column shows that the parts is/are supplied from MAVD.
7. " *1 ", " *2 " in the Remarks column shows the models as follows.
" *1 ": NV-FJ623EG-S, NV-FJ623EGYS
" *2 ": NV-FJ628EE-S

Ref. No.	Part No.	Part Name & Description	Remarks
■	VEP06E55M	MAIN C.B.A.	(RTL)[MAVD] *1
			THE FOLLOWING C.B.A.S ARE INCLUDED IN MAIN C.B.A.
			VEP07A16A,VEP07A23S
■	VEP06E55Q	MAIN C.B.A.	(RTL)[MAVD] *2
			THE FOLLOWING C.B.A.S ARE INCLUDED IN MAIN C.B.A.
			VEP07A18T,VEP07A23U
■	VEP07A16A	DECODER PACK C.B.A.	(RTL)[MAVD] *1
			INCLUDED IN MAIN C.B.A.(VEP06E55M).
■	VEP07A18T	NICAM DECODER PACK C.B.A.	(RTL)[MAVD] *2
			INCLUDED IN MAIN C.B.A.(VEP06E55Q).
■	VEP07A23S	TV DEMODULATOR PACK C.B.A	(RTL)[MAVD] *1
			INCLUDED IN MAIN C.B.A.(VEP06E55M).
■	VEP07A23U	TV DEMODULATOR PACK C.B.A	(RTL)[MAVD] *2
			INCLUDED IN MAIN C.B.A.(VEP06E55Q).
■	----------	CYLINDER STATOR C.B.A.	INCLUDED IN CYLINDER STATOR UNIT (VEM0715).
■	----------	CAPSTAN DRIVE C.B.A.	INCLUDED IN CAPSTAN UNIT (VEK9069).
■	VEP06E55M	MAIN C.B.A.	(RTL)[MAVD] *1
■	VEP06E55Q	MAIN C.B.A.	(RTL)[MAVD] *2
C0701	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	F1J1C105A063
C0702	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	
C0703	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	F1J1A1050002
C0704	ECUV1E333KBN	C.CAPACITOR CH 25V 0.033U	
C0707	ECEA1HKS2R2	E.CAPACITOR 50V 2.2U	
C0708	ECEA1HKAR47B	E.CAPACITOR 50V 0.47U	
C0710	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	ECJ1XF1H103Z
C0711	ECEA1CKS220	E.CAPACITOR 16V 22U	
C0712	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	
C0713	ECEA0JKS331	E.CAPACITOR 6.3V 330U	
C0714	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	F1J1C105A063
C0715	ECUX1H030CCV	C.CAPACITOR CH 50V 3P	ECJ1XC1H030C
C0717	ECUM1H330GUV	C.CAPACITOR CH 50V 33P	
C0719	ECUX1E104ZFV	C.CAPACITOR CH 25V 0.1U	F1H1E104A026
C0721	ECUX1H121JCV	C.CAPACITOR CH 50V 120P	*1 ECJ1XC1H121J
C0721	ECUX1H560JCV	C.CAPACITOR CH 50V 56P	*2
C0724	ECUX1H221KBV	C.CAPACITOR CH 50V 220P	ECJ1XB1H221K

Ref. No.	Part No.	Part Name & Description	Remarks
C1001	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	ECJ1XB1C104K
C1002	ECEA1AKS470	E.CAPACITOR 10V 47U	
C1003	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	ECJ1XB1C104K
C1006	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	ECJ1XB1C104K
C1008	ECA1EHJ470	E.CAPACITOR 25V 47U	[MAVD]
C1010	ECA1EHJ470	E.CAPACITOR 25V 47U	[MAVD]
C1011	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	ECJ1XB1C104K
C1012	ECEA1AKS220	E.CAPACITOR 10V 22U	
C1025	ECUV1H104KBN	C.CAPACITOR CH 50V 0.1U	[MAVD] ECJ2YB1H104K
C1026	ECUV1H104KBN	C.CAPACITOR CH 50V 0.1U	[MAVD] ECJ2YB1H104K
C1101	VCF2AAF683M	X2 CAPACITORS	⚠ [MAVD]
C1102	F1BAF1020020	CERAMIC CAPACITOR	⚠ [MAVD]
C1106	EEUEB2G330E	E.CAPACITOR 400V 33U	[MAVD]
C1107	F1A3A271A028	E.CAPACITOR 1KV 270U	F1A3A271A034
C1108	ECQB1H223JF3	P.CAPACITOR 50V 0.022U	
C1109	ECQB1H473JF3	P.CAPACITOR 50V 0.047U	
C1110	ECQV1H104JL3	P.CAPACITOR 50V 0.1U	
C1111	ECQB1H103JZ	P.CAPACITOR 50V 0.01U	
C1112	F1BAF1020020	CERAMIC CAPACITOR	⚠ [MAVD]
C1201	F1B3A332A004	E.CAPACITOR 1KV 3300U	[MAVD]
C1202	VCEA1HJB560B	E.CAPACITOR 50V 56U	[MAVD] F2A1H560A101
C1203	EEUFG1E821	E.CAPACITOR 25V 820P	[MAVD]
C1204	EEUFG1A182	E.CAPACITOR 10V 1800P	[MAVD]
C1205	VCEA1HJB560B	E.CAPACITOR 50V 56U	[MAVD] F2A1H560A101
C1206	VCEA1AJB101B	E.CAPACITOR 10V 100U	[MAVD] F2A1A101A089
C1207	ECQV1H104JL3	P.CAPACITOR 50V 0.1U	
C1208	ECA1AHJ331	E.CAPACITOR 10V 330U	[MAVD]
C1209	ECA1EM101	E.CAPACITOR 25V 100U	
C1502	ECUX1H331JCV	C.CAPACITOR CH 50V 330P	F1H1H3310005
C2502	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	ECJ1XB1C104K
C2505	ECUX1C563KBV	C.CAPACITOR CH 16V 0.056U	[MAVD]
C2506	ECUX1C563KBV	C.CAPACITOR CH 16V 0.056U	[MAVD]
C2507	ECUX1C563KBV	C.CAPACITOR CH 16V 0.056U	[MAVD]
C2508	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	
C2509	ECUX1C474ZFV	C.CAPACITOR CH 16V 0.47U	
C2510	ECUX1H330JCV	C.CAPACITOR CH 50V 33P	ECJ1XC1H330J
C2511	ECEA0JKN220B	E.CAPACITOR 6.3V 22U	
C2512	ECEA1EKS4R7	E.CAPACITOR 25V 4.7U	
C2513	ECUX1H392KBV	C.CAPACITOR CH 50V 3900P	
C2515	ECEA1VKN4R7	E.CAPACITOR 35V 4.7U	
C2516	ECEA1VKN4R7	E.CAPACITOR 35V 4.7U	
C2517	ECEA0JKS470	E.CAPACITOR 6.3V 47U	
C2518	ECUV1H473ZFV	C.CAPACITOR CH 50V 0.047U	ECJ1VF1H473Z
C2519	ECEA1EKA470B	E.CAPACITOR 25V 47U	
C2520	ECUV1E683KBN	C.CAPACITOR CH 25V 0.068U	ECJ2VB1E683K
C2521	ECUV1C154KBN	C.CAPACITOR CH 16V 0.15U	
C2522	ECUV1C154KBN	C.CAPACITOR CH 16V 0.15U	
C2523	ECUV1C154KBN	C.CAPACITOR CH 16V 0.15U	
C2524	ECEA1VKN4R7	E.CAPACITOR 35V 4.7U	
C3002	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	
C3003	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	
C3004	ECEA1HKS010	E.CAPACITOR 50V 1U	
C3008	ECUX1H680JCV	C.CAPACITOR CH 50V 68P	

Ref. No.	Part No.	Part Name & Description	Remarks
C3009	ECUX1H070DCV	C.CAPACITOR CH 50V 7P	
C3012	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	ECJ1XB1C104K
C3013	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	ECJ1XF1H103Z
C3015	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	ECJ1XF1H103Z
C3016	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	ECJ1XF1H103Z
C3017	ECEA1AKS221	E.CAPACITOR 10V 220U	
C3018	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	
C3019	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	
C3020	ECEA1HKS010	E.CAPACITOR 50V 1U	
C3021	ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	
C3022	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	
C3023	ECEA0JKS470	E.CAPACITOR 6.3V 47U	
C3024	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	ECJ1XB1C104K
C3025	ECUX1H222KBV	C.CAPACITOR CH 50V 2200P	ECJ1XB1H222K
C3027	ECEA1HKSR33	E.CAPACITOR 50V 0.33U	*2
C3028	ECEA0JKS470	E.CAPACITOR 6.3V 47U	
C3029	ECEA0JKS470	E.CAPACITOR 6.3V 47U	
C3030	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	
C3031	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	ECJ1XF1H103Z
C3032	ECUX1H222KBV	C.CAPACITOR CH 50V 2200P	ECJ1XB1H222K
C3033	ECEA1HKAR47B	E.CAPACITOR 50V 0.47U	
C3035	ECEA1EKN4R7B	E.CAPACITOR 25V 4.7U	
C3036	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	
C3037	ECEA1AKS221	E.CAPACITOR 10V 220U	
C3038	ECEA1EKS4R7	E.CAPACITOR 25V 4.7U	
C3039	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	
C3040	ECEA0JKS470	E.CAPACITOR 6.3V 47U	
C3041	ECEA1AKS220	E.CAPACITOR 10V 22U	
C3042	ECUX1E223KBV	C.CAPACITOR CH 25V 0.022U	F1H1E223A024
C3043	ECEA1CKS100	E.CAPACITOR 16V 10U	
C3045	ECUX1H560JCV	C.CAPACITOR CH 50V 56P	
C3046	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	
C3047	ECYX1H821JCV	C.CAPACITOR CH 50V 820P	
C3048	ECUX1H221JCV	C.CAPACITOR CH 50V 220P	ECJ1XC1H221J
C3050	ECEA1AKS220	E.CAPACITOR 10V 22U	
C3051	ECUX1H681JCV	C.CAPACITOR CH 50V 680P	
C3052	ECUX1H820JCV	C.CAPACITOR CH 50V 82P	
C3053	ECUX1H680JCV	C.CAPACITOR CH 50V 68P	
C3054	ECUX1H680JCV	C.CAPACITOR CH 50V 68P	
C3501	ECEA0JKS470	E.CAPACITOR 6.3V 47U	
C3502	ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	
C3503	ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	
C3505	ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	
C3506	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	ECJ1XB1C104K
C3507	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	ECJ1XB1C104K
C3508	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	ECJ1XB1C104K
C3509	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	ECJ1XB1C104K
C3510	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	ECJ1XB1C104K
C3511	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	ECJ1XB1C104K
C4001	ECUM1H222KBN	C.CAPACITOR CH 50V 2200P	
C4002	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	ECJ1XB1C104K
C4004	ECEA1AKS220	E.CAPACITOR 10V 22U	
C4005	ECEA1HKS010	E.CAPACITOR 50V 1U	
C4006	ECUX1H272KBV	C.CAPACITOR CH 50V 2700P	

Ref. No.	Part No.	Part Name & Description	Remarks
C4007	ECUV1H122JCN	C.CAPACITOR CH 50V 1200P	ECJ2VC1H122J
C4008	ECEA1EKS4R7	E.CAPACITOR 25V 4.7U	
C4009	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	F1J1C105A063
C4010	ECUX1E273KBV	C.CAPACITOR CH 25V 0.027U	
C4011	ECUX1H153KBV	C.CAPACITOR CH 50V 0.015U	*1
C4011	ECUX1H682KBV	C.CAPACITOR CH 50V 6800P	*2
C4012	ECUX1H822KBV	C.CAPACITOR CH 50V 8200P	*2
C4013	ECUX1H153KBV	C.CAPACITOR CH 50V 0.015U	*1
C4013	ECUX1E223KBV	C.CAPACITOR CH 25V 0.022U	*2 F1H1E223A024
C4014	ECEA1HKS010	E.CAPACITOR 50V 1U	
C4015	ECEA0JKS470	E.CAPACITOR 6.3V 47U	
C4016	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	ECJ1XB1C104K
C4017	ECEA1AKS220	E.CAPACITOR 10V 22U	
C4018	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	ECJ1XB1C104K
C4019	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	
C4020	ECEA0JKS470	E.CAPACITOR 6.3V 47U	
C4026	ECEA1AKS220	E.CAPACITOR 10V 22U	
C4028	ECUX1E223KBV	C.CAPACITOR CH 25V 0.022U	F1H1E223A024
C4029	ECUX1H152KBV	C.CAPACITOR CH 50V 1500P	ECJ1XB1H152K
C4030	ECEA1AKS221	E.CAPACITOR 10V 220U	
C4031	ECQB1H223JF3	P.CAPACITOR 50V 0.022U	
C4032	ECUX1H221JCV	C.CAPACITOR CH 50V 220P	ECJ1XC1H221J
C4034	ECUX1H822KBV	C.CAPACITOR CH 50V 8200P	
C4501	ECEA1CKS100	E.CAPACITOR 16V 10U	
C4502	ECEA1CKS100	E.CAPACITOR 16V 10U	
C4503	ECEA1CKS100	E.CAPACITOR 16V 10U	
C4504	ECQB1H473JF4	P.CAPACITOR 50V 0.047U	
C4505	ECEA1AKS330B	E.CAPACITOR 10V 33U	
C4506	ECEA1CKS100	E.CAPACITOR 16V 10U	
C4507	ECEA1CKS220	E.CAPACITOR 16V 22U	
C4508	ECQB1H153JF	P.CAPACITOR 50V 0.015U	
C4509	ECUX1C333KBV	C.CAPACITOR CH 16V 0.033U	
C4510	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	ECJ1XF1H103Z
C4511	ECUX1H151JCV	C.CAPACITOR CH 50V 150P	ECJ1XC1H151J
C4512	ECUX1H151JCV	C.CAPACITOR CH 50V 150P	ECJ1XC1H151J
C4513	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	ECJ1XF1H103Z
C4514	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	ECJ1XF1H103Z
C4515	ECEA0JKS101	E.CAPACITOR 6.3V 100U	
C4516	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	
C4518	ECUV1C224KBN	C.CAPACITOR CH 16V 0.22U	ECJ2VB1C224K
C4519	ECQB1H153JF3	P.CAPACITOR 50V 0.015U	
C4520	ECEA1CKS220	E.CAPACITOR 16V 22U	
C4521	ECEA1CKS100	E.CAPACITOR 16V 10U	
C4522	ECQB1H473JF3	P.CAPACITOR 50V 0.047U	
C4523	ECEA1AKS330	E.CAPACITOR 10V 33U	
C4528	ECEA1CKS100	E.CAPACITOR 16V 10U	
C4531	ECEA1CKS100	E.CAPACITOR 16V 10U	
C4532	ECEA1CKS100	E.CAPACITOR 16V 10U	
C4533	ECEA1CKS100	E.CAPACITOR 16V 10U	
C4534	ECEA1AKS220	E.CAPACITOR 10V 22U	
C4536	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	ECJ1XB1C104K
C4537	ECUX1H103KBV	C.CAPACITOR CH 50V 0.01U	
C4538	ECEA1CKA470	E.CAPACITOR 16V 47U	
C4909	ECUX1H470JCV	C.CAPACITOR CH 50V 47P	ECJ1XC1H470J

Ref. No.	Part No.	Part Name & Description	Remarks
C4910	ECUX1H470JCV	C.CAPACITOR CH 50V 47P	ECJ1XC1H470J
C4912	ECJ1XB1H471K	C.CAPACITOR CH 50V 470P	
C4913	ECJ1XB1H471K	C.CAPACITOR CH 50V 470P	
C4914	ECJ1XB1H471K	C.CAPACITOR CH 50V 470P	
C4915	ECJ1XB1H471K	C.CAPACITOR CH 50V 470P	
C4927	ECA0JM471G	E.CAPACITOR 6.3V 470U	ECA0JM471B
C4941	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	
C4946	ECUX1H222KBV	C.CAPACITOR CH 50V 2200P	ECJ1XB1H222K
C6001	ECEA0JKS470	E.CAPACITOR 6.3V 47U	
C6002	ECUX1H151JCV	C.CAPACITOR CH 50V 150P	ECJ1XC1H151J
C6003	ECUX1H471JCV	C.CAPACITOR CH 50V 470P	ECJ1XC1H471J
C6004	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	ECJ1XF1H103Z
C6005	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	ECJ1XF1H103Z
C6008	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	
C6009	ECUX1H180JCV	C.CAPACITOR CH 50V 18P	
C6010	ECUM1H240JCV	C.CAPACITOR CH 50V 24P	*1 [MAVD]
C6010	ECUX1H180JCV	C.CAPACITOR CH 50V 18P	*2
C6011	ECUX1H220JCV	C.CAPACITOR CH 50V 22P	*1 ECJ1XC1H220J
C6011	ECUX1H180JCV	C.CAPACITOR CH 50V 18P	*2
C6012	ECUX1H220JCV	C.CAPACITOR CH 50V 22P	ECJ1XC1H220J
C6013	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	
C6014	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	
C6015	ECEA1CKS100	E.CAPACITOR 16V 10U	
C6016	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	ECJ1XF1H103Z
C6017	ECUX1H681JCV	C.CAPACITOR CH 50V 680P	
C7301	ECUV1H103KBN	C.CAPACITOR CH 50V 0.01U	*1 ECJ2VB1H103K
C7301	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	*2 ECJ1XF1H103Z
C7302	ECEA1HKNR47B	E.CAPACITOR 50V 0.47U	*1
C7303	ECEA1HKNR47B	E.CAPACITOR 50V 0.47U	*1
C7304	ECUV1H681JCN	C.CAPACITOR CH 50V 680P	*1
C7304	VCEA0JAW101	E.CAPACITOR 6.3V 100U	*2
C7305	ECUX1H123KBN	C.CAPACITOR CH 50V 0.012U	*1
C7305	ECUX1H330JCV	C.CAPACITOR CH 50V 33P	*2 ECJ1XC1H330J
C7306	ECUX1H123KBN	C.CAPACITOR CH 50V 0.012U	*1
C7306	ECUX1H330JCV	C.CAPACITOR CH 50V 33P	*2 ECJ1XC1H330J
C7307	ECUV1H681JCN	C.CAPACITOR CH 50V 680P	*1
C7307	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	*2 ECJ1XF1H103Z
C7308	ECEA1HKNR47B	E.CAPACITOR 50V 0.47U	*1
C7308	ECEA1HKS2R2	E.CAPACITOR 50V 2.2U	*2
C7309	ECUV1H103KBN	C.CAPACITOR CH 50V 0.01U	*1 ECJ2VB1H103K
C7310	ECUV1H103KBN	C.CAPACITOR CH 50V 0.01U	*1 ECJ2VB1H103K
C7311	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	*2
C7312	ECEA1CKS100	E.CAPACITOR 16V 10U	*1
C7312	ECUX1H220JCV	C.CAPACITOR CH 50V 22P	*2 ECJ1XC1H220J
C7313	ECEA1CKS100	E.CAPACITOR 16V 10U	*1
C7313	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	*2
C7315	ECUV1E104KBN	C.CAPACITOR CH 25V 0.1U	*2 F1J1E1040007
C7316	ECUV1H104ZFN	C.CAPACITOR CH 50V 0.1U	*1 ECJ2VF1H104Z
C7316	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	*2
C7317	ECEA0JKS101	E.CAPACITOR 6.3V 100U	*1
C7317	VCEA1CAW100	E.CAPACITOR 16V 10U	*2 F2A1C1000015
C7318	ECEA1CKS100	E.CAPACITOR 16V 10U	*1
C7318	VCEA0JAW470	E.CAPACITOR 6.3V 47U	*2 F2A0J4700008
C7319	ECEA1CKA470	E.CAPACITOR 16V 47U	*1

Ref. No.	Part No.	Part Name & Description	Remarks
C7319	VCEA1CAW100	E.CAPACITOR 16V 10U	*2 F2A1C1000015
C7320	ECUV1H472KBN	C.CAPACITOR CH 50V 4700P	*1 F1J1H472A592
C7320	VCEA1CAW100	E.CAPACITOR 16V 10U	*2 F2A1C1000015
C7321	ECEA1HKAR47B	E.CAPACITOR 50V 0.47U	*1
C7322	ECEA1HKNR47B	E.CAPACITOR 50V 0.47U	*1
C7323	ECUV1H104KBN	C.CAPACITOR CH 50V 0.1U	*1 [MAVD] ECJ2YB1H104K
C7324	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	*2
C7325	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	*2
C7326	ECUM1H152KBM	C.CAPACITOR CH 50V 1500P	*1
C7327	ECUM1H152KBM	C.CAPACITOR CH 50V 1500P	*1
C7328	ECUM1H152KBM	C.CAPACITOR CH 50V 1500P	*1
C7341	ECUX1H472KBV	C.CAPACITOR CH 50V 4700P	*2
C7342	ECUX1H472KBV	C.CAPACITOR CH 50V 4700P	*2
C7343	ECUX1H222KBV	C.CAPACITOR CH 50V 2200P	*2 ECJ1XB1H222K
C7501	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	ECJ1XF1H103Z
C7502	ECEA1HKS100	E.CAPACITOR 50V 10U	ECEA1HKA100B
C7503	ECUX1H120JCV	C.CAPACITOR CH 50V 12P	
C7504	ECEA0JKS101	E.CAPACITOR 6.3V 100U	
C7507	VCE0073	SUPER CAPACITOR	
C7508	ECEA1AKS221	E.CAPACITOR 10V 220U	
C7509	ECUX1H682KBV	C.CAPACITOR CH 50V 6800P	
C7510	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	ECJ1XF1H103Z
C7511	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	
C7603	ECEA0JKS101	E.CAPACITOR 6.3V 100U	
C7604	ECEA0JKS101	E.CAPACITOR 6.3V 100U	
C7610	ECEA1HKS010	E.CAPACITOR 50V 1U	
C7613	ECUX1H103ZFN	C.CAPACITOR CH 50V 0.01U	*1 ECJ2XF1H103Z
C7613	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	*2 ECJ1XF1H103Z
C7614	ECUX1H330JCV	C.CAPACITOR CH 50V 33P	ECJ1XC1H330J
C7615	ECUX1H330JCV	C.CAPACITOR CH 50V 33P	ECJ1XC1H330J
C7616	ECEA0JKS101	E.CAPACITOR 6.3V 100U	
C7617	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	ECJ1XF1H103Z
C7620	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	*2
C7623	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	*2 ECJ1XF1H103Z
C7625	ECUX1H222KBV	C.CAPACITOR CH 50V 2200P	*2 ECJ1XB1H222K
C7626	ECUX1H222KBV	C.CAPACITOR CH 50V 2200P	*2 ECJ1XB1H222K
C7627	ECUX1H103ZFV	C.CAPACITOR CH 50V 0.01U	ECJ1XF1H103Z
C7703	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	
C7704	ECEA0JKS470	E.CAPACITOR 6.3V 47U	
C7707	ECUX1C104ZFV	C.CAPACITOR CH 16V 0.1U	
C7710	ECUX1H330JCV	C.CAPACITOR CH 50V 33P	*2 ECJ1XC1H330J
C7711	ECUX1H221JCV	C.CAPACITOR CH 50V 220P	ECJ1XC1H221J
C7712	ECUM1C105ZFN	C.CAPACITOR CH 16V 1U	F1J1C105A063
C7713	ECEA0JKS470	E.CAPACITOR 6.3V 47U	
D0702	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	D0GBR00JA017
D1003	MA4056N-H	DIODE	MAZ4056NH
D1004	MA4056N-H	DIODE	MAZ4056NH
D1006	MA4056N-H	DIODE	MAZ4056NH
D1008	MA4130N-L	DIODE	MAZ4130NL
D1101	ERZVA5Z471	TRANSIENT/SURGE ABSORBER	⚠
D1103	DF08S-6622	DIODE	B0KB00000013
D1104	MA4027-L	DIODE	MAZ40270L
D1105	MA165	DIODE	MA2C165

Ref. No.	Part No.	Part Name & Description	Remarks
D1106	MA185	DIODE	MA2C185
D1107	MAZ751000C	DIODE	
D1108	AU01Z	DIODE	B0HAGM000006
D1201	MA185	DIODE	MA2C185
D1204	21DQ10FC4	DIODE	B0JAML000007
D1206	11EQS04	DIODE	B0JAME000020
D1207	11EQS04	DIODE	B0JAME000020
D1208	MA185	DIODE	MA2C185
D1209	11EQS04	DIODE	B0JAME000020
D1501	SIR505S	DIODE	B3EA00000040
D2501	MA165	DIODE	MA2C165
D2502	MA165	DIODE	MA2C165
D3001	MA165	DIODE	MA2C165
D4502	MA165	DIODE	MA2C165
D4901	MA4051N-M	DIODE	MAZ4051NM
D4902	MA4051N-M	DIODE	MAZ4051NM
D4904	MA165	DIODE	MA2C165
D7501	MA4220N-M	DIODE	[MAVD]
D7503	RB441P	DIODE	
D7601	MA4300M	DIODE	MAZ43000M
DP7501	A2BD00000040	DISPLAY TUBE	
F1101	VSF0243C16	FUSE	⚠ K5D162BL0004
FL7301	VLF0633	FILTER	*2 J0HACK000008
IC0701	LA75503	IC	C1AA00000606
IC1201	UPC1093J	IC	C0DAEMC00002
IC1501	RPI354N	IC	B3EZ00000001
IC1502	RPI354N	IC	B3EZ00000001
IC2501	AN3811NK	IC	
IC3001	AN3531NFBS	IC	
IC3501	AN3368SB	IC	
IC4501	AN3656NFBPBV	IC	
IC6001	C2CBJG000215	IC	[MAVD]
IC7301	C0ZBZ0000580	IC	*1 [MAVD]
IC7301	TDA9874AH	IC	*2 C1AB00001404
IC7302	PST7043	IC	*2 C0EAH0000051
IC7501	M35502AFP	IC	
IC7502	PNA4618M08VT	IC	[MAVD]
IC7503	C0EBE0000211	IC	[MAVD]
IC7504	C0EBH0000218	IC	[MAVD]
IC7702	M24C16-WBN6	IC	C3EAGC000015
JK4903	K1FB121B0003	SOCKET	[MAVD]
K0701	ECUX1H560JCV	C.CAPACITOR CH 50V 56P	*1
K0703	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	
K0707	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	
K0709	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	
K1213	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	D0GBR00JA017
K3003	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	D0GBR00JA017
K3506	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	D0GBR00JA017

Ref. No.	Part No.	Part Name & Description	Remarks
K3508	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	D0GBR00JA017
K3509	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	D0GBR00JA017
K4004	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	D0GBR00JA017
K4007	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	D0GBR00JA017
K4915	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	D0GBR00JA017
K4916	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	D0GBR00JA017
K7301	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	D0GBR00JA017
K7302	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	*2 D0GBR00JA017
K7303	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	*2 D0GBR00JA017
K7502	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	D0GBR00JA017
K7602	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	*2 D0GBR00JA017
K7603	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	D0GBR00JA017
K7605	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	D0GBR00JA017
K7611	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	D0GBR00JA017
K7613	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	*2 D0GBR00JA017
K7615	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	D0GBR00JA017
K7702	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	D0GBR00JA017
L0701	ELJNAR27JF	INDUCTOR 0.27UH	
L0703	ELJNA2R2JF	INDUCTOR 2.2UH	
L1101	ELF15N005A	LINE FILTER	⚠
L1102	ELF15N003A	LINE FILTER	⚠
L1201	VLQ0775K220	CHOKE COIL	[MAVD]
L1202	G0A220G00018	COIL	G0A220G00019
L2501	VLQ0599J680	COIL 68UH	G0C680JA0026
L3002	VLQ0599J220	COIL 22UH	G0C220JA0026
L3005	VLQ0599J470	COIL 47UH	G0C470JA0026
L3006	VLQ0599J101	COIL 100UH	G0C101JA0026
L3007	VLQ0599J680	COIL 68UH	G0C680JA0026
L3008	VLQ0599J101	COIL 100UH	G0C101JA0026
L3009	VLQ0599J330	COIL 33UH	G0C330JA0026
L3010	VLQ0599J470	COIL 47UH	G0C470JA0026
L3011	VLQ0599J390	COIL 39UH	G0C390JA0026
L3012	VLQ0599J560	COIL 56UH	G0C560JA0026
L3501	VLQ0599J330	COIL 33UH	G0C330JA0026
L4001	ELELN153JA	INDUCTOR 15000UH	
L4003	VLQ0599J680	COIL 68UH	G0C680JA0026
L4502	VLQ0599J1R2	COIL 1.2UH	G0C1R2JA0026
L4901	VLQ0599JR22	COIL 0.22UH	
L6001	VLQ0599J101	COIL 100UH	G0C101JA0026
L7302	VLQ0599J1R0	COIL 1UH	*2 G0C1R0JA0026
L7601	VLQ0599J330	COIL 33UH	G0C330JA0026
L7602	VLQ0599J270	COIL 27UH	G0C270JA0026
L7603	VLQ0599J270	COIL 27UH	G0C270JA0026
L7604	VLQ0599J2R2	COIL 2.2UH	G0C2R2JA0026
L7607	VLQ0599J100	COIL 10UH	*2 G0C100JA0026
L7608	VLQ0599J2R2	COIL 2.2UH	*2 G0C2R2JA0026
L7609	VLQ0599J100	COIL 10UH	G0C100JA0026
L7701	VLQ0599J680	COIL 68UH	G0C680JA0026
L7702	VLQ0599J330	COIL 33UH	*2 G0C330JA0026
L7703	VLQ0599J680	COIL 68UH	G0C680JA0026
LB0701	VLP0147	COIL	*2 J0JBC0000041

Ref. No.	Part No.	Part Name & Description	Remarks
LB1102	J0JHC0000070	FILTER	[MAVD]
LB1106	J0JHC0000070	FILTER	[MAVD]
LB1107	J0JKB0000028	FILTER	J0JKB0000027
LB1109	J0JKB0000028	FILTER	J0JKB0000027
LB3501	VLP0147	COIL	J0JBC0000041
LB3502	VLP0147	COIL	J0JBC0000041
LB3503	VLP0147	COIL	J0JBC0000041
LB3504	VLP0147	COIL	J0JBC0000041
LB4905	ERJ6GEYG221	M.RESISTOR CH 1/10W 220	
LB4906	ERJ6GEYG221	M.RESISTOR CH 1/10W 220	
LB7301	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	*2 D0GBR00JA017
LB7303	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	*2 D0GBR00JA017
LR1101	VLP0392	COIL	
P1102	K2AA2K000012	AC INLET	⚠ [MAVD]
P1501	VJS3837A002	CONNECTOR (FEMALE) 2P	K1KB02A00035
P2501	VJP3835E012	CONNECTOR (MALE) 12P	[MAVD] K1KA12A00127
P2502	VJS3537A009G	CONNECTOR (FEMALE) 9P	K1MN09A00012
P3502	VJS3537A010G	CONNECTOR (FEMALE) 10P	K1MN10A00036
P4002	VJS3837A002	CONNECTOR (FEMALE) 2P	K1KB02A00035
P4003	VJS3537A006G	CONNECTOR (FEMALE) 6P	K1MN06A00034
PK0701	VJR0826E009W	CONNECTOR (MALE) 9P	K1MR09A00028
PK7301	VJR0777B007W	CONNECTOR (MALE) 7P	K1MM07B00002
PK7302	VJR0777B006W	CONNECTOR (MALE) 6P	K1MM06B00002
PP0701	VJP3589E004B	CONNECTOR (MALE) 4P	K1KA04B00135
Q0702	2SD601A-S	TRANSISTOR	
Q1001	2SC1959-Y	TRANSISTOR	
Q1002	2SD602A-R	TRANSISTOR	2SD0602AR
Q1003	2SC1959-Y	TRANSISTOR	
Q1004	2SC1959-Y	TRANSISTOR	
Q1005	2SD602A-R	TRANSISTOR	2SD0602AR
Q1006	2SD601A-R	TRANSISTOR	2SD0601AR
Q1007	2SC1959-Y	TRANSISTOR	
Q1008	2SB710A	TRANSISTOR	2SB0710A
Q1010	2SC1959-Y	TRANSISTOR	
Q1011	2SD601A-R	TRANSISTOR	2SD0601AR
Q1101	2SK2876	TRANSISTOR	[MAVD]
Q1102	B1DEDR000003	TRANSISTOR	
Q1103	2SC3311A-S	TRANSISTOR	2SC3311AS
Q1104	2SD1992A-R	TRANSISTOR	
Q1201	PS2561L2V13W	PHOTO COUPLER	⚠
Q1501	PNB2301MBV	TRANSISTOR	
Q1502	PNB2301MAV	TRANSISTOR	
Q4001	2SD601A-R	TRANSISTOR	2SD0601AR
Q4002	2SD601A-R	TRANSISTOR	2SD0601AR
Q4005	2SB710-R	TRANSISTOR	2SB07100R
Q4006	2SD602A-R	TRANSISTOR	2SD0602AR
Q4901	2SD601A-R	TRANSISTOR	2SD0601AR
Q4904	2SB709A	TRANSISTOR	2SB0709A

Ref. No.	Part No.	Part Name & Description	Remarks
Q7707	2SB709A	TRANSISTOR	*2 2SB0709A
QR1001	UN2112	TRANSISTOR	UNR2112
QR1002	UN2211	TRANSISTOR	UNR2211
QR3502	UN2212	TRANSISTOR-RESISTOR	UNR2212
QR4001	UN2212	TRANSISTOR-RESISTOR	UNR2212
QR4002	UN2211	TRANSISTOR	UNR2211
QR4003	UN2111	TRANSISTOR	UNR211100L
QR4005	UN2113	TRANSISTOR-RESISTOR	UNR2113
QR4501	UN2216	TRANSISTOR	UNR2216
QR4502	UN2216	TRANSISTOR	UNR2216
QR4505	UN2113	TRANSISTOR-RESISTOR	UNR2113
QR4506	UN2216	TRANSISTOR	UNR2216
QR4904	UN2215	TRANSISTOR-RESISTOR	UNR2215
QR4905	UN2215	TRANSISTOR-RESISTOR	UNR2215
QR6001	UN2215	TRANSISTOR-RESISTOR	UNR2215
QR6006	UN2211	TRANSISTOR	UNR2211
QR7601	UN2215	TRANSISTOR-RESISTOR	*1 UNR2215
R0705	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	
R0707	ERJ3GEYJ393	M.RESISTOR CH 1/16W 39K	
R0708	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	
R0709	ERJ6GEYG104	M.RESISTOR CH 1/10W 100K	*2
R0711	ERJ3GEYJ181V	M.RESISTOR CH 1/16W 180	
R0713	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	
R0714	ERJ3GEYJ562V	M.RESISTOR CH 1/16W 5.6K	*2 D0GB562JA002
R0715	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	
R0717	ERJ3GEYJ471	M.RESISTOR CH 1/16W 470	
R0719	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	
R0725	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	
R0727	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	
R0729	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	*1
R0730	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	*1
R0731	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	*2 D0GB101JA002
R0732	ERJ3GEYJ472	M.RESISTOR CH 1/16W 4.7K	*2
R0740	ERJ3GEYG471V	M.RESISTOR CH 1/16W 470	*1
R0740	ERJ3GEYG271	M.RESISTOR CH 1/16W 270	*2
R0741	ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	
R0742	ERJ8GEYJ151	M.RESISTOR CH 1/8W 150	
R0745	ERJ6GEYJ335	M.RESISTOR CH 1/10W 3.3M	
R1001	ERJ6GEYG683	M.RESISTOR CH 1/10W 68K	
R1002	ERJ6GEYG683	M.RESISTOR CH 1/10W 68K	
R1003	ERJ6GEYJ563	M.RESISTOR CH 1/10W 56K	
R1004	ERJ6GEYJ563	M.RESISTOR CH 1/10W 56K	
R1006	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	
R1007	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	
R1008	ERJ6GEYJ223	M.RESISTOR CH 1/10W 22K	
R1009	ERJ6GEYJ223	M.RESISTOR CH 1/10W 22K	
R1010	ERDS2FJ103	C.RESISTOR 1/4W 10K	
R1011	ERJ6GEYG562	M.RESISTOR CH 1/10W 5.6K	
R1012	ERDS2FJ471	C.RESISTOR 1/4W 470	
R1015	ERDS2FJ102	C.RESISTOR 1/4W 1K	
R1016	ERDS2FJ102	C.RESISTOR 1/4W 1K	
R1017	ERDS2FJ471	C.RESISTOR 1/4W 470	

Ref. No.	Part No.	Part Name & Description	Remarks
R1023	ERDS2FJ103	C.RESISTOR 1/4W 10K	
R1025	ERJ6GEYJ472V	M.RESISTOR CH 1/10W 4.7K	
R1026	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	
R1027	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	
R1029	ERJ6GEYG562	M.RESISTOR CH 1/10W 5.6K	
R1030	ERJ6GEYG562	M.RESISTOR CH 1/10W 5.6K	
R1102	ERDS2TJ105T	C.RESISTOR 1/4W 1M	
R1103	ERDS2TJ105T	C.RESISTOR 1/4W 1M	
R1104	ERDS2FJ102	C.RESISTOR 1/4W 1K	
R1105	ERDS2FJ101	C.RESISTOR 1/4W 100	
R1106	ERG2SJ331	M.RESISTOR 2W 330	ERG2SJ331E
R1107	ERDS2FJ101	C.RESISTOR 1/4W 100	
R1108	ERX1SJR51	M.RESISTOR 1W 0.51	ERX1SJR51E
R1109	ER0S2CKF1801	M.RESISTOR 1/4W 180	
R1110	ERDS2FJ104	C.RESISTOR 1/4W 100K	ERDS2TJ104T
R1111	ERDS2FJ331	C.RESISTOR 1/4W 330	
R1112	ERDS2FJ3R3	C.RESISTOR 1/4W 3.3	ERDS2TJ3R3T
R1113	ERDS2FJ330	C.RESISTOR 1/4W 33	ERDS2TJ330T
R1201	ERJ6GEYG222	M.RESISTOR CH 1/10W 2.2K	
R1202	ERJ6GEYG271	M.RESISTOR CH 1/10W 270	
R1203	ERJ6GEYG223V	M.RESISTOR CH 1/10W 22K	
R1204	ERJ6GEYF123	M.RESISTOR CH 1/10W 12K	
R1205	ERJ6GEYG222	M.RESISTOR CH 1/10W 2.2K	ERJ6GEYG222V
R1206	ERJ6GEYF333	M.RESISTOR CH 1/10W 33K	
R1207	ERJ6GEYF333	M.RESISTOR CH 1/10W 33K	
R1208	ERJ6GEYF822	M.RESISTOR CH 1/10W 8.2K	
R1209	ERJ6GEYG563V	M.RESISTOR CH 1/10W 56K	
R1501	ERDS2FJ121	C.RESISTOR 1/4W 120	ERDS2TJ121T
R1502	ERDS2TJ181	C.RESISTOR 1/4W 180	
R1503	ERJ6GEYJ273	M.RESISTOR CH 1/10W 27K	
R1504	ERJ6GEYJ273	M.RESISTOR CH 1/10W 27K	
R1505	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	
R2501	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	D0GBR00JA017
R2502	ERJ6GEYG222	M.RESISTOR CH 1/10W 2.2K	
R2503	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	
R2504	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	
R2505	ERJ6GEYG392	M.RESISTOR CH 1/10W 3.9K	
R2506	ERJ6GEYG105	M.RESISTOR CH 1/10W 1M	ERJ6GEYJ105V
R2508	ERJ6GEYG433	M.RESISTOR CH 1/10W 43K	
R2509	ERDS2FJ331	C.RESISTOR 1/4W 330	
R2510	ERDS2FJ330	C.RESISTOR 1/4W 33	ERDS2TJ330T
R2511	ERDS2FJ330	C.RESISTOR 1/4W 33	ERDS2TJ330T
R2512	ERJ6GEYG102	M.RESISTOR CH 1/10W 1K	
R2515	ERDS2FJ330	C.RESISTOR 1/4W 33	ERDS2TJ330T
R2516	ERJ6GEYJ1R5	M.RESISTOR CH 1/10W 1.5	[MAVD]
R2517	ERJ6GEYJ1R2	M.RESISTOR CH 1/10W 1.2	
R3002	ERJ6GEYG183	M.RESISTOR CH 1/10W 18K	
R3006	ERJ6GEYG271	M.RESISTOR CH 1/10W 270	
R3007	ERJ6GEYG331	M.RESISTOR CH 1/10W 330	
R3012	ERJ6GEYJ472V	M.RESISTOR CH 1/10W 4.7K	
R3013	ERJ6GEYG104	M.RESISTOR CH 1/10W 100K	*2
R3015	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	
R3016	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	
R3017	ERJ6GEYG122	M.RESISTOR CH 1/10W 1.2K	

Ref. No.	Part No.	Part Name & Description	Remarks
R3018	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	
R3019	ERJ6GEYF473	M.RESISTOR CH 1/10W 47K	
R3022	ERJ6GEYJ684	M.RESISTOR CH 1/10W 680K	
R3023	ERJ6GEYJ224	M.RESISTOR CH 1/10W 220K	
R3025	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	D0GBR00JA017
R3026	ERJ6GEYG392	M.RESISTOR CH 1/10W 3.9K	
R3027	ERJ6GEYG271	M.RESISTOR CH 1/10W 270	
R3028	ERJ6GEYG102	M.RESISTOR CH 1/10W 1K	
R3029	ERJ6GEYG152V	M.RESISTOR CH 1/10W 1.5K	
R3030	ERJ6GEYG331	M.RESISTOR CH 1/10W 330	
R3031	ERJ6GEYG392	M.RESISTOR CH 1/10W 3.9K	
R3032	ERJ6GEYG392	M.RESISTOR CH 1/10W 3.9K	
R3033	ERJ6GEYG152V	M.RESISTOR CH 1/10W 1.5K	
R3034	ERJ6GEYJ225	M.RESISTOR CH 1/10W 2.2M	
R3501	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	
R3503	ERJ6GEYG391	M.RESISTOR CH 1/10W 390	
R3504	ERJ6GEYG301	M.RESISTOR CH 1/10W 300	[MAVD]
R3506	ER0S2CHF3600	M.RESISTOR 1/4W 360	
R4001	ERJ6GEYG102	M.RESISTOR CH 1/10W 1K	
R4002	ERJ6GEYJ334	M.RESISTOR CH 1/10W 330K	
R4003	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	
R4004	ERJ6GEYG241	M.RESISTOR CH 1/10W 240	
R4005	ERJ6GEYJ223	M.RESISTOR CH 1/10W 22K	
R4006	ERJ6GEYG753	M.RESISTOR CH 1/10W 75K	
R4007	ERJ6GEYJ153V	M.RESISTOR CH 1/10W 15K	
R4008	ERJ6GEYJ224	M.RESISTOR CH 1/10W 220K	
R4009	ERJ6GEYG222	M.RESISTOR CH 1/10W 2.2K	
R4010	ERJ6GEYG222	M.RESISTOR CH 1/10W 2.2K	
R4011	ERJ6GEYJ471	M.RESISTOR CH 1/10W 470	
R4012	ERJ6GEYG331	M.RESISTOR CH 1/10W 330	*2
R4014	ERJ6GEYG181	M.RESISTOR CH 1/10W 180	*1
R4014	ERJ6GEYG391	M.RESISTOR CH 1/10W 390	*2
R4015	ERJ6GEYG391	M.RESISTOR CH 1/10W 390	*1
R4015	ERJ6GEYG181	M.RESISTOR CH 1/10W 180	*2
R4016	ERJ6GEYJ225	M.RESISTOR CH 1/10W 2.2M	
R4017	ERJ6GEYJ273	M.RESISTOR CH 1/10W 27K	
R4018	ERJ6GEYG183	M.RESISTOR CH 1/10W 18K	
R4019	ERJ6GEYF333	M.RESISTOR CH 1/10W 33K	
R4020	ERJ6GEYJ472V	M.RESISTOR CH 1/10W 4.7K	
R4021	ERJ6GEYG332	M.RESISTOR CH 1/10W 3.3K	
R4022	ERJ6GEYF561	M.RESISTOR CH 1/10W 560	
R4026	ERJ6GEYJ472V	M.RESISTOR CH 1/10W 4.7K	
R4027	ERJ6GEYG332	M.RESISTOR CH 1/10W 3.3K	
R4028	ERJ6GEYG272	M.RESISTOR CH 1/10W 2.7K	
R4029	ERJ6GEYG332	M.RESISTOR CH 1/10W 3.3K	
R4030	ERJ6GEYF822	M.RESISTOR CH 1/10W 8.2K	
R4508	ERJ6GEYG681	M.RESISTOR CH 1/10W 680	
R4509	ERJ6GEYG683	M.RESISTOR CH 1/10W 68K	
R4510	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	
R4511	ERJ6GEYG562	M.RESISTOR CH 1/10W 5.6K	
R4512	ERJ6GEYG683	M.RESISTOR CH 1/10W 68K	
R4513	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	
R4514	ERJ6GEYG562	M.RESISTOR CH 1/10W 5.6K	
R4515	ERJ6GEYJ472V	M.RESISTOR CH 1/10W 4.7K	

Ref. No.	Part No.	Part Name & Description	Remarks
R4516	ERJ6GEYJ511	M.RESISTOR CH 1/10W 510	
R4517	ERJ6GEYJ223	M.RESISTOR CH 1/10W 22K	
R4518	ERJ6GEYJ223	M.RESISTOR CH 1/10W 22K	
R4519	ERJ6GEYG821	M.RESISTOR CH 1/10W 820	
R4520	ERJ6GEYJ124V	M.RESISTOR CH 1/10W 120K	
R4521	ERJ6GEYJ511	M.RESISTOR CH 1/10W 510	
R4522	ERJ6GEYJ303	M.RESISTOR CH 1/10W 30K	
R4523	ERJ6GEYJ472V	M.RESISTOR CH 1/10W 4.7K	
R4524	ERJ6GEYG102	M.RESISTOR CH 1/10W 1K	
R4525	ERJ6GEYG102	M.RESISTOR CH 1/10W 1K	
R4527	ERJ6GEYJ472V	M.RESISTOR CH 1/10W 4.7K	
R4528	ERJ6GEYG391	M.RESISTOR CH 1/10W 390	
R4535	ERJ6GEYG221	M.RESISTOR CH 1/10W 220	
R4536	ERJ6GEYG221	M.RESISTOR CH 1/10W 220	
R4537	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	D0GBR00JA017
R4538	ERJ6GEYG102	M.RESISTOR CH 1/10W 1K	
R4901	ERDS2FJ471	C.RESISTOR 1/4W 470	
R4902	ERDS2FJ471	C.RESISTOR 1/4W 470	
R4904	ERJ6GEYJ153V	M.RESISTOR CH 1/10W 15K	
R4909	ERJ6GEYJ223	M.RESISTOR CH 1/10W 22K	
R4910	ERJ6GEYJ474V	M.RESISTOR CH 1/10W 470K	
R4913	ERJ6GEYJ750	M.RESISTOR CH 1/10W 75	
R4914	ERJ6GEYJ750	M.RESISTOR CH 1/10W 75	
R4916	ERJ6GEYG331	M.RESISTOR CH 1/10W 330	
R4918	ERJ6GEYG331	M.RESISTOR CH 1/10W 330	
R4928	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	D0GBR00JA017
R4945	ERJ6GEYJ153V	M.RESISTOR CH 1/10W 15K	
R4946	ERJ6GEYJ223	M.RESISTOR CH 1/10W 22K	
R4948	ERJ6GEYJ106V	M.RESISTOR CH 1/10W 10M	
R6001	ERJ6GEYG562	M.RESISTOR CH 1/10W 5.6K	
R6002	ERJ6GEYG102	M.RESISTOR CH 1/10W 1K	
R6003	ERJ6GEYG183	M.RESISTOR CH 1/10W 18K	
R6004	ERJ6GEYJ224	M.RESISTOR CH 1/10W 220K	
R6005	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	D0GBR00JA017
R6008	ERJ6GEYG222	M.RESISTOR CH 1/10W 2.2K	
R6009	ERJ6GEYJ223	M.RESISTOR CH 1/10W 22K	
R6011	ERJ6GEYG221	M.RESISTOR CH 1/10W 220	
R6012	ERJ6GEYG221	M.RESISTOR CH 1/10W 220	
R6013	ERJ6GEYG221	M.RESISTOR CH 1/10W 220	
R6014	ERJ6GEYJ471	M.RESISTOR CH 1/10W 470	
R6015	ERJ6GEYJ471	M.RESISTOR CH 1/10W 470	
R6016	ERJ6GEYG102	M.RESISTOR CH 1/10W 1K	
R6017	ERJ6GEYG102	M.RESISTOR CH 1/10W 1K	
R6018	ERJ6GEYG102	M.RESISTOR CH 1/10W 1K	
R6019	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	
R6020	ERJ6GEYF393	M.RESISTOR CH 1/10W 39K	
R6021	ERJ6GEYJ273	M.RESISTOR CH 1/10W 27K	
R6022	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	
R6023	ERJ6GEYJ273	M.RESISTOR CH 1/10W 27K	
R6025	ERJ6GEYJ433V	M.RESISTOR CH 1/10W 43K	
R6026	ERJ6GEYF393	M.RESISTOR CH 1/10W 39K	
R6029	ERJ6GEYJ472V	M.RESISTOR CH 1/10W 4.7K	
R6030	ERJ6GEYJ472V	M.RESISTOR CH 1/10W 4.7K	
R6031	ERJ6GEYG682	M.RESISTOR CH 1/10W 6.8K	

Ref. No.	Part No.	Part Name & Description	Remarks
R7301	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	*1 D0GBR00JA017
R7302	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	*2
R7304	ERJ6GEYJ472V	M.RESISTOR CH 1/10W 4.7K	*1
R7305	ERJ6GEYG562	M.RESISTOR CH 1/10W 5.6K	*1
R7305	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	*2
R7306	ERJ6GEYG562	M.RESISTOR CH 1/10W 5.6K	*1
R7306	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	*2
R7307	ERJ6GEYG682	M.RESISTOR CH 1/10W 6.8K	*1
R7308	ERJ6GEYG682	M.RESISTOR CH 1/10W 6.8K	*1
R7309	ERJ6GEYG221	M.RESISTOR CH 1/10W 220	*1
R7311	ERJ6GEYJ752	M.RESISTOR CH 1/10W 7.5K	*1
R7312	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	*1
R7313	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	*1
R7314	ERJ6GEYG332	M.RESISTOR CH 1/10W 3.3K	*1
R7315	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	*1 D0GBR00JA017
R7316	ERJ6GEYG682	M.RESISTOR CH 1/10W 6.8K	*1
R7316	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	*2
R7317	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	*1 D0GBR00JA017
R7318	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	*1 D0GBR00JA017
R7319	ERJ6GEYG332	M.RESISTOR CH 1/10W 3.3K	*1
R7320	ERJ6GEYG332	M.RESISTOR CH 1/10W 3.3K	*1
R7324	ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	*2
R7325	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	*2
R7327	ERJ3GEYJ822V	M.RESISTOR CH 1/16W 8.2K	*2 D0GB822JA002
R7328	ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	*2
R7329	ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	*2
R7501	ERJ6GEYF822	M.RESISTOR CH 1/10W 8.2K	
R7502	ERJ6GEYG562	M.RESISTOR CH 1/10W 5.6K	
R7503	ERJ6GEYJ432V	M.RESISTOR CH 1/10W 4.3K	
R7504	ERJ6GEYF822	M.RESISTOR CH 1/10W 8.2K	
R7505	ERJ6GEYG562	M.RESISTOR CH 1/10W 5.6K	
R7506	ERJ6GEYJ432V	M.RESISTOR CH 1/10W 4.3K	
R7507	ERDS2TJ560	C.RESISTOR 1/4W 56	ERDS2TJ560T
R7508	ERDS2TJ560	C.RESISTOR 1/4W 56	ERDS2TJ560T
R7509	ERJ6GEYJ750	M.RESISTOR CH 1/10W 75	
R7510	ERDS2FJ821	C.RESISTOR 1/4W 820	ERDS2TJ821T
R7511	ERDS2FJ821	C.RESISTOR 1/4W 820	ERDS2TJ821T
R7513	ERJ6GEYJ303	M.RESISTOR CH 1/10W 30K	
R7514	ERJ6GEYJ303	M.RESISTOR CH 1/10W 30K	
R7515	ERJ6GEYJ303	M.RESISTOR CH 1/10W 30K	
R7516	ERJ6GEYJ303	M.RESISTOR CH 1/10W 30K	
R7517	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	
R7518	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	
R7519	ERJ6GEYJ432V	M.RESISTOR CH 1/10W 4.3K	
R7521	ERJ6GEYJ223	M.RESISTOR CH 1/10W 22K	
R7534	ERJ6GEYG181	M.RESISTOR CH 1/10W 180	
R7535	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	
R7536	ERJ6GEYG562	M.RESISTOR CH 1/10W 5.6K	
R7537	ERJ6GEYF123	M.RESISTOR CH 1/10W 12K	
R7538	ERJ6GEYF123	M.RESISTOR CH 1/10W 12K	
R7539	ERJ6GEYF822	M.RESISTOR CH 1/10W 8.2K	
R7601	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	D0GBR00JA017
R7604	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	
R7605	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	

Ref. No.	Part No.	Part Name & Description	Remarks
R7606	ERDS2FJ331	C.RESISTOR 1/4W 330	
R7607	ERDS2FJ331	C.RESISTOR 1/4W 330	
R7608	ERJ6GEYJ151V	M.RESISTOR CH 1/10W 150	
R7610	ERJ6GEYJ471	M.RESISTOR CH 1/10W 470	
R7611	ERJ6GEYJ471	M.RESISTOR CH 1/10W 470	
R7613	ERJ6GEYJ151V	M.RESISTOR CH 1/10W 150	
R7614	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	
R7615	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	
R7616	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	D0GBR00JA017
R7618	ERJ6GEYG563V	M.RESISTOR CH 1/10W 56K	*1
R7712	ERJ6GEYJ472V	M.RESISTOR CH 1/10W 4.7K	
R7713	ERJ6GEYJ472V	M.RESISTOR CH 1/10W 4.7K	
R7714	ERJ6GEYJ472V	M.RESISTOR CH 1/10W 4.7K	
R7715	ERJ6GEYG221	M.RESISTOR CH 1/10W 220	
R7724	ERJ6GEYG221	M.RESISTOR CH 1/10W 220	
R7725	ERJ6GEYG221	M.RESISTOR CH 1/10W 220	
R7727	ERJ6GEYG152	M.RESISTOR CH 1/10W 1.5K	*2
R7728	ERJ6GEYF473	M.RESISTOR CH 1/10W 47K	*1
R7729	ERJ6GEYG102	M.RESISTOR CH 1/10W 1K	
R7730	ERJ6GEYG102	M.RESISTOR CH 1/10W 1K	
R7731	ERJ6GEYG102	M.RESISTOR CH 1/10W 1K	
R7733	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	
S1501	K0G934A00002	SWITCH	K0ZZ00000452
S7501	EVQ11G07K	SWITCH	
S7502	EVQ11G07K	SWITCH	
S7503	EVQ11404M	SWITCH	
S7504	EVQ11404M	SWITCH	
S7505	EVQ11L07B	SWITCH	
S7506	EVQPC005B	SWITCH	
S7507	K0C111A00003	SWITCH	
S7511	EVQ11L07B	SWITCH	
S7512	EVQ11G07K	SWITCH	
S7513	EVQ11L07B	SWITCH	
S7514	EVQ11G07K	SWITCH	
S7515	EVQ11L07B	SWITCH	
S7516	EVQ11G07K	SWITCH	
S7517	EVQ11L07B	SWITCH	
T0701	EQV5EC082P	TRANSFORMER	*1
T0701	EQV5EC081P	TRANSFORMER	*2
T1101	ETS29AZ286AC	SWITCHING TRANSFORMER	⚠ [MAVD]
T4002	EQQ7QF024P	TRANSFORMER	
TU7601	ENG47327G1	TUNER	⚠ *1 [MAVD]
TU7601	ENG47329G1	TUNER	⚠ *2 [MAVD]
VR0701	EVNCYAA03B14	V.RESISTOR 10K	
VR7301	EVNCYAA03B14	V.RESISTOR 10K	*1
X0701	VLF1416	FILTER	*1 J0B4045A0002
X0701	VLF1430	TRANSFORMER	*2 J0B3955A0001
X0702	VLF1431	TRANSFORMER	*2 J0B4055A0001

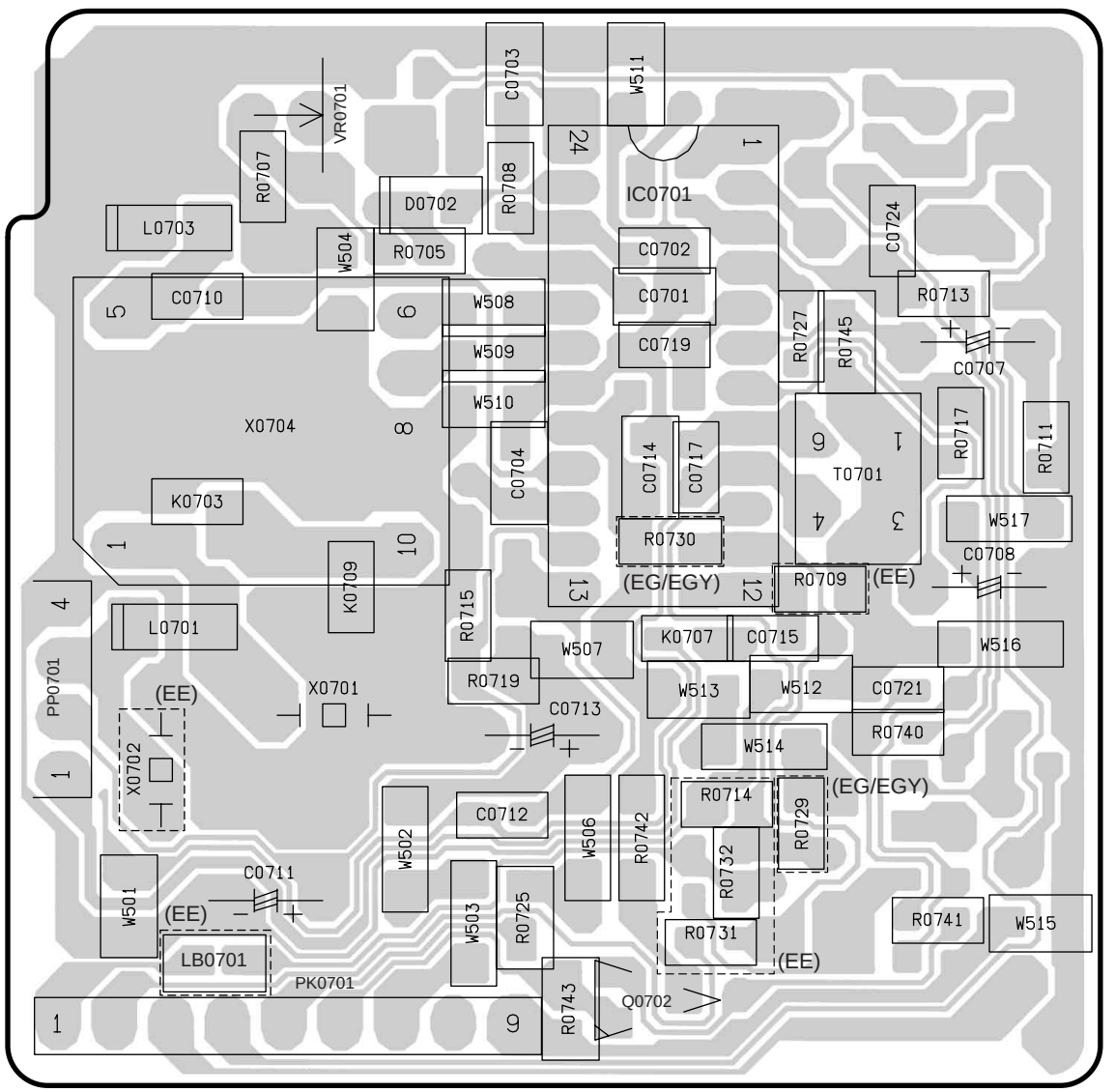
Ref. No.	Part No.	Part Name & Description	Remarks
X0704	VLF1493	FILTER	*1
X0704	VLF1497	TRANSFORMER	*2
X3001	VSX0162	CRYSTAL OSCILLATOR	
X6001	VSX1022	CRYSTAL OSCILLATOR	
X6002	H0H200500011	CRYSTAL OSCILLATOR	[MAVD]
X7301	VSX1086	CRYSTAL OSCILLATOR	*1 [MAVD]
X7302	H0D245500016	CRYSTAL OSCILLATOR	*2 [MAVD]
		MISCELLANEOUS	
	EYF52BC	FUSE HOLDER	K3GD9BB00001
	EYF52BC	FUSE HOLDER	K3GD9BB00001
	VSC4998	HA ANGLE	
	VMP4894	SUPPORT ANGLE	*1 FOR DECODER C.B.A.
	VSC4752	SHIELD CASE (MAIN)	*2 FOR NICAM DECODER C.B.A.
	VMP5897	CONNECTING ANGLE	FOR TV DEMODULATOR C.B.A.
■	----------	CYLINDER STATOR C.B.A.	
		MISCELLANEOUS	
	VJS3537F009G	CONNECTOR (FEMALE) 9P	K1MN09B00039
	HW-300A-DF	HALL IC	B4AAB0000007

12. Schematic Diagram for printing with A4 size

TV DEMODULATOR PACK C.B.A.	
Transistor	
Q0702	A-3
Integrated Circuit	
IC0701	C-2
Adjustment	
T0701	B-3
VR0701	D-2
Connector	
PK0701	A-2
PP0701	B-1

ADDRESS INFORMATION

(VEP07A23S:NV-FJ623EG/EGY)
(VEP07A23U:NV-FJ628EE)



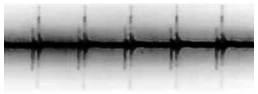
NV-FJ623EG/EGY,FJ628EE
TV DEMODURATOR PACK C.B.A.

T1101-3 STOP
9.0Vp-p (2msec. div.)

T1101-7 STOP
100Vp-p (5µsec. div.)

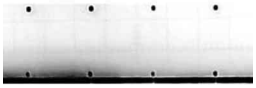
IC1101-1 STOP
470Vp-p (5µsec. div.)

IC1101-2 STOP
8.0Vp-p (10µsec.div.)

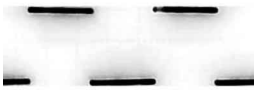


IC1101-4 STOP
0.5Vp-p (10µsec.div.)

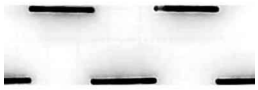
IC1101-5 STOP
0.6Vp-p (10µsec.div.)



IC6001-20 PAUSE
5.0Vp-p (10msec.div.)

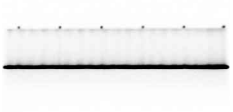


IC6001-21 REC
5.0Vp-p (10msec.div.)

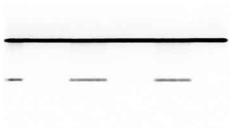


IC6001-24 REC
5.0Vp-p (10msec.div.)

IC6001-61 REC
2.4Vp-p (20µsec.div.)



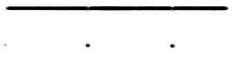
IC6001-68 REC
5.0Vp-p (10msec.div.)



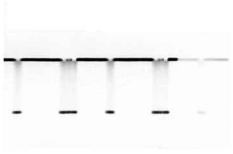
IC6001-89 REC
5.0Vp-p (10msec.div.)

IC6001-90,91 REC
5.0Vp-p (10msec.div.)

IC6001-93,94 FF/REW
5.0Vp-p (1msec.div.)



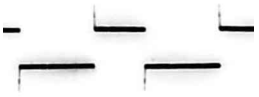
IC6001-97,98 REC
5.0Vp-p (10msec.div.)



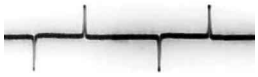
IC6001-99 REC
5.0Vp-p (10msec.div.)

IC6001-100 REC
5.0Vp-p (10msec.div.)

IC6001-107 REC
5.0Vp-p (10msec.div.)

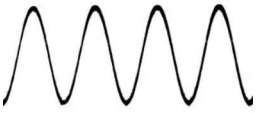


IC6001-111,112 REC
6.0Vp-p (10msec.div.)

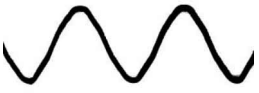


IC6001-114 PLAY
4.2Vp-p (10msec.div.)

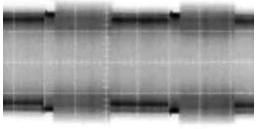
IC2501-1,2,16 REC
8.6Vp-p (5msec.div.)



IC3001-2 REC
1.2Vp-p (5msec.div.)

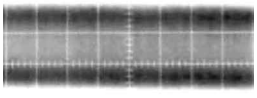


IC3001-4 PLAY
5.0Vp-p (5msec.div.)

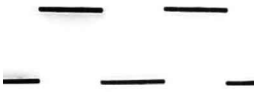


IC3001-14 REC
0.4Vp-p (5msec.div.)

IC3001-15 PLAY
0.5Vp-p (20µsec.div.)



IC3001-20 PLAY
150mVp-p (20µsec. div.)



IC3001-24 REC/PLAY
5.0Vp-p (10msec. div.)

IC3001-37 REC/PLAY
5.0Vp-p (5msec. div.)

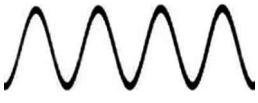
IC3001-38 REC/PLAY
5.0Vp-p (5msec. div.)

IC3001-42,43 PLAY
0.4Vp-p (20µsec. div.)

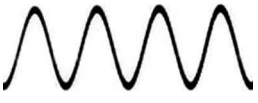
IC3001-48,50 REC
1.0Vp-p (20µsec. div.)

IC3001-52 REC/PLAY
2.0Vp-p (20µsec. div.)

IC3001-78 REC/PLAY
1.2Vp-p (5msec. div.)



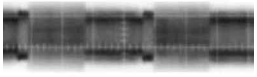
IC4501-9,14 REC
1.2Vp-p (5msec. div.)



IC4501-21 REC
1.2Vp-p (5msec. div.)

IC4501-53,57
REC/PLAY
1.2Vp-p (5msec. div.)

IC3501-1 REC/PLAY
5.0Vp-p (10msec. div.)



IC3501-30 PLAY
0.4Vp-p (5msec. div.)

IC3501-31 REC
0.3Vp-p (5msec. div.)

SYSTEM CONTROL & SERVO ICs DC VOLTAGE CHART (SP MODE)

Ref. No.	IC1501								IC1502											
MODE	1	2	3	4					1	2	3	4								
STOP	1.2	2.3	4.9	0.0					0.0	1.2	4.9	0.0								
PLAY	1.2	2.3	4.2	0.0					0.0	1.2	4.9	0.0								
REC	1.2	2.3	4.8	0.0					0.0	1.2	4.8	0.0								
F.F	1.2	2.3	2.2	0.0					0.0	1.2	2.4	0.0								
REW	1.2	2.3	2.4	0.0					0.0	1.2	2.3	0.0								

Ref. No.	IC2501																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
STOP	16.8	16.8	16.8	4.9	4.9	1.2	1.1	0.0	2.7	1.5	0.0	4.1	4.1	3.7	0.0	16.8				
PLAY	14.9	14.9	15.2	1.1	4.9	1.1	1.2	0.6	2.4	1.5	0.0	3.8	3.8	3.8	0.0	14.9				
REC	15.1	15.1	15.4	1.0	4.9	1.1	1.2	0.6	2.4	1.5	0.0	3.8	3.8	3.8	0.0	15.1				
F.F	14.4	14.4	14.6	1.0	4.9	1.1	1.2	0.6	2.4	1.5	0.0	3.8	3.8	3.8	0.0	14.7				
REW	14.3	14.3	14.6	1.1	4.9	1.1	1.2	0.6	2.4	1.5	0.0	3.8	3.8	3.8	0.0	14.9				

Ref. No.	IC6001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	0.0	1.9	0.0	0.0	3.5	0.0	0.0	0.0	2.4	0.0	0.0	4.9	4.9	4.7	4.1	0.0	4.9	0.0	0.0	0.0
PLAY	4.7	1.8	0.0	0.0	3.9	0.0	0.0	0.0	2.4	0.0	4.3	4.9	4.9	4.6	0.1	0.0	0.0	0.0	0.0	0.0
REC	4.7	1.9	0.0	0.0	2.2	0.0	0.0	0.0	2.4	0.0	0.0	4.9	4.8	4.6	4.0	0.0	0.0	0.0	4.9	0.0
F.F	4.9	1.8	0.0	0.0	3.5	0.0	0.0	0.0	2.4	0.0	0.0	4.9	4.8	4.8	4.1	0.0	4.9	0.0	0.0	0.0
REW	4.9	1.8	0.0	0.0	3.4	0.0	0.0	0.0	2.4	0.0	0.0	4.9	4.9	4.6	4.1	0.0	4.9	0.0	0.0	0.0

Ref. No.	IC6001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	0.0	0.0	2.5	2.4	0.0	4.8	0.0	4.9	0.0	0.0	-	-	4.9	0.0	1.5	3.0	0.0	0.0	0.0	4.9
PLAY	2.4	0.0	4.9	2.4	2.4	4.8	0.0	0.0	0.0	0.0	-	-	4.9	0.0	1.5	3.0	4.9	0.0	0.0	4.9
REC	2.4	0.0	4.8	2.4	0.0	4.8	0.0	4.9	0.0	0.0	-	-	4.9	0.0	1.5	3.0	0.0	4.9	4.9	0.0
F.F	0.0	0.0	0.0	2.4	0.0	4.8	0.0	4.9	0.0	0.0	-	-	4.9	0.0	1.5	3.0	0.0	0.0	0.0	4.9
REW	0.0	0.0	0.0	2.4	0.0	4.8	0.0	4.9	0.0	0.0	-	-	4.9	0.0	1.5	3.0	0.0	0.0	0.0	4.9

Ref. No.	IC6001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
STOP	0.0	0.0	5.0	4.9	0.0	0.0	0.0	0.0	0.0	0.0	4.9	4.9	1.5	2.1	4.9	1.9	0.0	2.4	4.9	0.0
PLAY	0.0	0.0	5.0	4.9	0.0	0.0	0.0	0.0	0.0	0.0	4.9	4.9	1.5	2.1	4.9	1.9	0.0	2.4	4.9	0.0
REC	0.0	4.9	5.0	4.9	0.0	0.0	0.0	0.0	0.0	0.0	4.9	4.9	1.5	2.1	4.8	1.9	0.0	2.4	4.9	0.0
F.F	0.0	0.0	5.0	4.9	4.9	0.0	0.0	0.0	0.0	0.0	4.9	4.9	1.5	2.1	4.9	1.9	0.0	2.5	4.9	0.0
REW	0.0	0.0	5.0	4.9	4.9	0.0	0.0	0.0	0.0	0.0	4.9	4.9	1.5	2.1	4.9	1.9	0.0	2.4	4.9	0.0

Ref. No.	IC6001																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
STOP	1.9	2.1	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	4.9	4.9	0.0	0.0	0.0	5.2	5.2	0.0	0.0	2.7
PLAY	1.9	2.1	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	4.9	4.8	0.0	0.0	0.0	5.2	5.2	0.0	2.4	2.4
REC	1.9	2.1	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	4.9	4.8	0.0	0.0	0.0	5.2	5.2	0.0	2.4	2.4
F.F	1.9	2.1	0.0	0.0	0.0	0.0	0.0	0.4	1.6	0.0	4.9	4.8	0.0	0.0	0.0	5.2	5.2	0.0	2.9	2.4
REW	1.9	2.1	0.0	0.0	0.0	0.0	0.0	0.4	1.6	0.0	4.9	4.8	0.0	0.0	0.0	5.2	5.2	0.0	2.9	2.4

Ref. No.	IC6001																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
STOP	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	4.9	4.9	4.9	2.4	4.9	4.9	0.0	4.9	4.8	4.8	4.1	4.1
PLAY	0.0	0.4	0.0	0.0	0.3	0.0	0.0	0.0	4.9	4.9	4.9	2.4	4.1	4.8	0.0	4.9	4.8	4.8	4.2	4.1
REC	0.0	0.4	0.0	0.0	4.5	0.0	0.0	0.0	4.9	4.9	4.9	2.4	4.2	4.8	0.0	4.9	4.8	4.8	4.1	4.0
F.F	0.0	4.8	0.0	0.0	0.3	0.0	0.0	0.0	4.9	4.9	4.9	2.4	2.3	2.3	0.0	4.9	4.8	4.8	4.2	4.1
REW	0.0	4.8	4.9	0.0	0.3	0.0	0.0	0.0	4.9	4.9	4.9	2.4	2.2	2.3	0.0	4.9	4.8	4.8	4.2	4.1

Ref. No.	IC6001																			
MODE	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116				
STOP	0.0	0.0	2.5	2.5	0.0	0.0	4.9	2.5	2.5	0.0	2.5	2.5	2.5	2.5	4.9	4.9				
PLAY	0.0	0.0	2.5	2.5	0.0	0.0	1.1	2.5	2.5	0.0	2.5	2.5	2.5	2.5	4.9	4.9				
REC	0.0	0.0	2.4	2.4	0.0	0.0	1.0	2.4	2.4	0.0	1.9	2.3	2.5	2.5	4.9	4.9				
F.F	0.0	0.0	2.5	2.5	0.0	0.0	1.0	2.5	2.5	0.0	2.5	2.5	2.5	2.5	5.0	5.0				
REW	0.0	0.0	2.5	2.5	0.0	0.0	1.1	2.5	2.5	0.0	2.5	2.5	2.5	2.5	5.0	5.0				

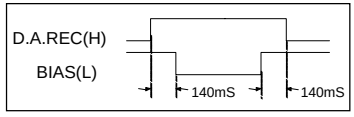
Ref. No. E	IC7702																			
MODE	1	2	3	4	5	6	7	8												
STOP	0.0	0.0	0.0	0.0	4.8	4.8	4.9	4.9												
PLAY	0.0	0.0	0.0	0.0	4.8	4.8	4.9	4.9												
REC	0.0	0.0	0.0	0.0	4.8	4.8	4.9	4.9												
F.F	0.0	0.0	0.0	0.0	4.8	4.8	4.9	4.9												
REW	0.0	0.0	0.0	0.0	4.8	4.8	4.9	4.9												

SYSTEM CONTROL & SERVO TRs DC VOLTAGE CHART (SP MODE)

Ref. No.	Q1501				Q1502				Q7707											
MODE	+	−			+	−			E	C	B									
STOP	4.7	0.0			4.9	0.0			2.5	0.0	1.9									
PLAY	4.7	0.0			4.9	0.0			2.5	0.0	1.9									
REC	4.6	0.0			4.8	0.0			2.5	0.0	1.9									
F.F	4.7	0.0			4.9	0.0			2.5	0.0	1.9									
REW	4.9	0.0			4.9	0.0			2.5	0.0	1.9									

Ref. No.	QR6001				QR6006															
MODE	E	C	B		E	C	B													
STOP	0.0	0.0	4.9		0.0	0.0	4.9													
PLAY	0.0	12.3	0.0		0.0	0.0	4.8													
REC	0.0	0.0	4.9		0.0	0.0	4.8													
F.F	0.0	0.0	4.9		0.0	0.0	4.8													
REW	0.0	0.0	4.9		0.0	0.0	4.8													

No.	Port Name	I/O	Description	P-OFF	P-Save	P-FAIL	Reset
1	CURRENT_LIMIT	O	Capstan motor current limit terminal.	Low	Low	Low	Low
2	F ADJUST	O	Analogue voltage output for HEAD frequency response adjustment	Low	Low	Low	Low
3	N.C.	--	Low fix (No Connection.)	Low	Low	Low	Low
4	C EMPHA(H)	O	Terminal of the Current emphasis video/FM audio recording current. [HIFI/2HEAD]:Fix to Low (Normal mode) [4HEAD] :Fix to Low (factory mode) Fix to High (Insert/AV Insert mode) Others (Depend on tape speed)	Low	Low	Low	Low
5	TRACKING_ENVE	O	Playback envelope input for auto tracking adjustment and cvc.	In	In	In	In
6	SLP(H)	O	Tape running speed output terminal.(Output signal depens on tape speed) [High]……During NTSC_10H or PAL_9H mode [Low]……Except NTSC_10H or PAL_9H mode	Low	Low	Low	Low
7	LP(H)	O	Tape running speed output terminal.(Output signal depens on tape speed) [High]……During NTSC_4H/6H or PAL_6H/9H mode [Low]……Except NTSC_4H/6H or PAL_6H/9H mode 2HEAD model: Low Fix	Low	Low	Low	Low
8	CPB	I	Input terminal for "PB (H)" from AV2. [High]…….3.85V - 5.0V [Midd]…….1.82V - 2.84V [Low]……. 0V - 0.81V	In	In	In	In
9	AFC S	I	"S-curve" Input terminal from tuner.	In	In	In	In
10	A-MUTE(H)	O	Audio mute output terminal for RF Converter.	High	High	Low	High
11	AV1_8IN	I	Input terminal for "PB (H)" from AV1. [High]…….3.85V - 5.0V [Midd]…….1.82V - 2.84V [Low]……. 0V - 0.81V	In	In	In	In
12	N/S/T2/T3	I	Mode select terminal [NORMAL mode]: More than 4.0V [SERVICE mode]: 2.5V - 4.0V [TEST_2 mode]: 1.0V - 2.5V [TEST_3 mode]: 0V - 1.0V	In	In	In	In
13	S-PHOTO	I	Tape end sensor input terminal.(Photo sensor input from supply side) [Black Tape]: more than 2.6V [Lead Tape]: Less than 2.4V	In	In	In	In
14	T-PHOTO	I	Tape beginning sensor input terminal.(Photo sensor input from take-up side) [Black Tape]: more than 2.6V [Lead Tape]: Less than 2.4V	In	In	In	In
15	ABS_NORM(H)	I	(Input terminal for FM audio enverope output level detection)	In	In	In	In
16	N.C	--	Low fix (No Connection.)	Low	Low	Low	Low
17	PLAY_REC(L)	O	Output terminal for switching the capstan voltage. [Other than PLAY/REC mode]……Always "High". [JOG/Shuttle mode in PLAY mode]……Always "High". After 5 seconds from PLAY/REC mode completion, it changes to "Low". During "Low" outputs, it checks every main capstan FG, when the no FG is inputted in a rotation, it changes to "High" and it keeps "high" by cassette ejection.	Low	Low	Low	Low
18	VSYNC(L)	O	Output terminal for V_sync detection result. [Vsync exist] : "Low" [Vsync not exist: "High"	Low	Low	Low	Low
19	D.FM.REC(H)	O	Timing output terminal for FM_Audio recording current.	Low	Low	Low	Low
20	ART.V/H/N	O	Output terminal for Artificial V synchronization signal.	Low	Low	Low	Low

No.	Port Name	I/O	Description	P-OFF	P-Save	P-FAIL	Reset
21	ROTARY.SW	O	Output terminal for rotary switch.	Low	Low	Low	Low
22	H.A.SW	O	Output terminal for HEAD AMP switch.	Low	Low	Low	Low
23	ENVE.SELECT	I	Input terminal for enverope selection.	Low	Low	Low	Low
24	VIDEO.H.SW	O	Output terminal for video HEAD switch.	Low	Low	Low	Low
25	A.H.SW	O	Output terminal for FM audio HEAD switch.	Low	Low	Low	Low
26	A.DEF(H)	O	Audio Mute output terminal for tuner and decoder. [High].....During VCR mode is NORMAL PLAY and VV mode.	Low	Low	Low	Low
27	PROG.ON(H)	O	I/O control to switch IIC bus for LW-programmer. H:IIC bus is connected to AV2. L:IIC bus is not connected to AV2.	Low	Low	Low	Low
28	AVPB-H(L)	O	"PB-(H)"output terminal for AV2 *Details, refer to 21pin control specifications. *The signal output from Pin-8 of 21pin terminal is shown below. pin8 \ Name: AVPB-H(L) / AVPBM-(H) High: L / Hi-Z Middle: H / Hi-Z Low: H / L	High	High	Low	High
29	AVPB-M(H)	O		Low	Low	Low	Low
30	GND(D)	--	GND	---	---	---	---
31	20MHz.IN	I	Main oscillator input	---	STOP	STOP	---
32	20MHz.OUT	O	Main oscillator output	---	STOP	STOP	---
33	+5V(D)	I	5V input terminal	---	---	---	---
34	32KHz IN	I	Sub oscillator input	---	---	---	---
35	32KHz OUT	O	Sub oscillator output	---	---	---	---
36	NC(VCONT)	I	Video Control	---	---	---	---
37	V EE(L)	O	Output terminal for switch between EE and VV.	Low	Low	Low	Low
38	D REC(H)	O	Output terminal for video recording current control.	Low	Low	Low	Low
39	D.A.REC(H)	O	Control terminal for normal audio recording current.	Low	Low	Low	Low
40	BIAS(L)	O	Bias oscillation Control terminal for Linear audio recording current. 	High	Hi-Z	Hi-Z	High
41	FM.MUTE(H)	O	Output terminal for audio mute control.	High	High	Low	High
42	FULL ERASE(L)	O	Output terminal for control FULL ERASE HEAD.	Low	Low	Low	Low
43	POWER_KEY	I	Input terminal for the unit power button. It switches ON to OFF and/or OFF to ON when down edge is detected.	In	In	In	In
44	POS.SW3	I	Input terminal for mecha position.	In	In	In	In
45	POS.SW2	I	Input terminal for mecha position.	In	In	In	In
46	POS.SW1	I	Input terminal for mecha position.	In	In	In	In
47	POWER OFF(H)	O	ON/OFF Control terminal for power circuit. Power off condition: "High" is existed. ("Low" is existed when the mechanism and/or circuit operation is activated.)	High	High	Low	High
48	FIP(L)	O	Output terminal for FIP on/off control signal. ("Low" is existed when the power off condition under the "FIP OFF" setting.)	Not fix	High	Low	Low
49	P50 IN	I	Input terminal for Project 50 serial signal.	In	In	In	In
50	LC.OSC IN	I	The oscillation input terminal for OSD dot clock.	---	---	---	---

No.	Port Name	I/O	Description	P-OFF	P-Save	P-FAIL	Reset
51	LC.OSC OUT	O	The oscillation output terminal for OSD dot clock.	---	---	---	---
52	RESET(L)	I	Input terminal for microprocessor reset.	In	In	In	In
53	4FC.LPF	I	4fc clock input terminal	---	---	---	---
54	OSD.FSC IN	I	OSD clock input terminal	---	---	---	---
55	5V(OSD)	I	5V input terminal	---	---	---	---
56	CVIN	I	Input terminal for Composite video signal.	---	---	---	---
57	GND(OSD)	I	GND	---	---	---	---
58	LECHA	I	Input terminal for Composite video signal.(White level)	---	---	---	---
59	20M.START(H)	I	Switching terminal for stertting Mode.(High speed/Low speed)	---	---	---	---
60	MD0	I	Mode setting terminal for flash over-write.	---	---	---	---
61	CVOUT	O	Output terminal for CG Video.	---	---	---	---
62	HLF	O	LPF connecting terminal for the slicer. (For OSD dot clock.)	---	---	---	---
63	SECAM.V.IN	I	Chrominance input terminal for SECAM super impose.	---	---	---	---
64	GND	I	Connect to GND	In	In	In	In
65	S TAB(L)	I	Input terminal for the prevention tab. [EXIST] :LOW [NO EXIST] :HIGH	In	In	In	In
66	UNLOADING(H)	O	Control terminal for loading motor. [Reverse rotation / brake] : "High"	Low	Low	Low	Low
67	LOADING(H)	O	Control terminal for loading motor. [forward rotation / brake] : "High"	Low	Low	Low	Low
68	C.SYNC	I	Input terminal for composite V-sync signal.	In	In	In	In
69	EX.FF/REW(L)	I	Filter control terminal for PB-CTL signal in FF/REW.	Low	Low	Low	Low
70	PAL-I/BG/DK(SYS4)	O	Output terminal for TV broadcast system switching signal for video circuit control.	Not fix	Low	Low	Low
71	SECAM/PAL(SYS2)	O	Output terminal for TV broadcast system switching signal for video circuit control.	Not fix	Low	Low	Low
72	SLEEP(L)	O	Output terminal for super power save mode setting. P-OFF in the super power save mode……. "Low".	High	Low	Low	High
73	PB60Hz(H)	O	Switching terminal for NTSC FM Audio trap filter in PB. [VV (PB,Trick_PB/A-DUB, A-DUB-PS) mode and CTL is 60Hz] : "High" [Other than above condition] : "Low"	Low	Low	Low	Low
74	ADUB(H)	O	Switching terminal for Bias oscillation noise filter in A-DUB mode. [ADUB/ADUB-PS(Including Assemble/syncro/AV-Insert)] : "High" [Other than above condition] : "Hi-Z"	Hi-Z	Hi-Z	Hi-Z	Hi-Z
75	N.C(VBI1)	O	Fix to Low.	Low	Low	Low	Low
76	P FAIL	I	Input terminal for Interrupt signal for power fail detection.	In	In	In	In
77	IR	I	Input terminal for Interrupt signal from IR sensor emitted by Remo-Con.	In	In	In	In
78	P50 OUT	O	Output terminal for Project 50 serial data.	Not fix	Low	Low	Low
79	CAP.ET	O	Output terminal for Capstan Torque command.	0V	0V	Low	0V
80	CYL.ET	O	Output terminal for Cylinder Torque command.	4.213V	4.213V	Low	4.213V
81	DIGI.LINK	O	Control signal for switching IR sensor.[only LOEWE model]	Low	Low	Low	Low
82	HALF_WAVE(H)	O	Switching terminal for capstan driver speed mode.(FAST/SLOW)	In	In	In	In
83	CAP.R/F	O	Switching terminal for capstan motor rotating direction.	Low	Low	Low	Low
84	125Hz	O	125Hz pulse output terminal for clock adjustment.	Not fix	Low	Low	Low
85	SHORT_DN	I	Short Circuit detection terminal for oscillation circuit in REC. *When the "BIAS(H)" is "Low" and this terminal is "High", "F08" is displayed. *When the "BIAS(H)" is "High" and this terminal is "low", "F07" is displayed.	In	In	In	In
86	N.C	--	Fix to Low.	Low	Low	Low	Low
87	N.C	--	Fix to Low.	Low	Low	Low	Low
88	N.C	--	Fix to Low.	Low	Low	Low	Low
89	FLD/T2 CLK	O	Serial clock output terminal for FIP driver and TEST_2(Factory use).	Not fix	Low	Low	Low
90	FLD/T2 DATA IN	I	Serial data input terminal for FIP driver and TEST_2(Factory use).	Not fix	In	In	In

No.	Port Name	I/O	Description	P-OFF	P-Save	P-FAIL	Reset
91	FLD/T2 DATA OUT	O	Serial data output terminal for FIP driver and TEST_2(Factory use).	Not fix	Low	Low	Low
92	FLD_CS	O	Chip select terminal for FIP driver.	Not fix	Low	Low	Low
93	T.REEL.PULSE	I	Input terminal for Take-up Reel sensor pulse.	In	In	In	In
94	S.REEL.PULSE	I	Input terminal for Supply Reel sensor pulse.	In	In	In	In
95	DAVN	I	DAVN signal from Slicer	In	In	In	In
96	EEP_WR	O	Write enable for EEPROM H:READ only L:Write	High	High	Low	High
97	OSD IIC CLK	O	IIC clock for EEPROM,I/O and slicer	Not fix	Low	Low	Low
98	OSD IIC DATA	I/O	IIC data for EEPROM,I/O and slicer	Not fix	Low	Low	Low
99	MAIN IIC CLK	O	IIC clock for AV1CHIP,FM audio,Tuner,Decoder and RFC	Not fix	Low	Low	Low
100	MAIN IIC DATA	I/O	IIC data for AV1CHIP,FM audio,Tuner,Decoder and RFC	Not fix	Low	Low	Low
101	N.C	--	Low fix terminal.	Low	Low	Low	Low
102	N.C	--	Low fix terminal.	Low	Low	Low	Low
103	FG.AMP.OUT	O	Output from internal FG Amplifier	---	---	---	---
104	FG.AMP.IN	I	Input for internal FG Amplifier	---	---	---	---
105	GND(A)	I	GND	---	---	---	---
106	GND	I	GND	---	---	---	---
107	PFG	I	Cylinder PG/FG input terminal	---	---	---	---
108	OREF	O	Output from internal reference voltage (2.5V)	---	---	---	---
109	IREF	I	Input for internal reference voltage	---	---	---	---
110	to GND	--	Connect to GND	---	---	---	---
111	CTL.HEAD(-)	I	Input signal from CTL HEAD(+)	---	---	---	---
112	CTL.HEAD(+)	I	Input signal from CTL HEAD(-)	---	---	---	---
113	CTL.AMP.REF	I	Input for internal CTL amplifier reference voltage	---	---	---	---
114	PB.CTL.OUT	O	Output from internal CTL amplifier	---	---	---	---
115	+5V(A)	I	5V input terminal	---	---	---	---
116	+5V(AD)	I	5V input terminal	---	---	---	---

INPUT CONDITION							VIDEO OUTPUT RESULT							AUDIO OUTPUT RESULT				
POWER	AV2 SELECT	TV/ VTR	EE/ VV	OSD ON(H)	INPUT CH	AV2 PB(H)	AV1 OUT	AV2 OUT	AV1 PB(H)	AV2 PB(H)	RGB SW	VCR IN	VCR OUT	AV1 Out	AV2 Out	RF (C)	AV1 Out Selector	AV2 Out Selector
OFF	---	---	---	---	---	L	AV2 In	AV1 In	L	L	OFF	TUN	TUN	AV2 In	AV1 In	Mute	AV2 In	AV1 In
						M/H	AV2 In	AV1 In	M/H	L	ON	TUN	TUN	AV2 In	AV1 In	Mute	AV2 In	AV1 In
VPS STAND BY or Personal Planner Standby	EXT or TIMER1 or TIMER2	---	---	L	NO.TU	L	AV2 In	AV1 In	L	L	OFF	TUN	TUN	AV2 In	AV1 In	Mute	AV2 In	AV1 In
						M/H	AV2 In	AV1 In	*[M/H]	L	ON	TUN	TUN	AV2 In	AV1 In	Mute	AV2 In	AV1 In
					C+.TU	L	AV2 In	AV1 In	L	L	OFF	TUN	TUN	AV2 In	AV1 In	Mute	AV2 In	AV1 In
						M/H	AV2 In	AV1 In	*[M/H]	L	ON	TUN	TUN	AV2 In	AV1 In	Mute	AV2 In	AV1 In
					AV1	L	AV2 In	AV1 In	L	L	OFF	AV1	AV1	AV2 In	AV1 In	Mute	AV2 In	AV1 In
						M/H	AV2 In	AV1 In	*[M/H]	L	ON	AV1	AV1	AV2 In	AV1 In	Mute	AV2 In	AV1 In
					AV2	L	AV2 In	AV1 In	L	L	OFF	AV2	AV2	AV2 In	AV1 In	Mute	AV2 In	AV1 In
						M/H	AV2 In	AV1 In	*[M/H]	L	ON	AV2	AV2	AV2 In	AV1 In	Mute	AV2 In	AV1 In
					AV3	L	AV2 In	AV1 In	L	L	OFF	AV3	AV3	AV2 In	AV1 In	Mute	AV2 In	AV1 In
						M/H	AV2 In	AV1 In	*[M/H]	L	ON	AV3	AV3	AV2 In	AV1 In	Mute	AV2 In	AV1 In
					SAT.NO	L	AV2 In	AV1 In	L	L	OFF	SAT	SAT	AV2 In	AV1 In	Mute	AV2 In	AV1 In
						M/H	AV2 In	AV1 In	*[M/H]	L	ON	SAT	SAT	AV2 In	AV1 In	Mute	AV2 In	AV1 In
					SAT.C+	L	AV2 In	AV1 In	L	L	OFF	SAT	SAT	AV2 In	AV1 In	Mute	AV2 In	AV1 In
						M/H	AV2 In	AV1 In	*[M/H]	L	ON	SAT	SAT	AV2 In	AV1 In	Mute	AV2 In	AV1 In
				H	NO.TU	L	VCR out	AV1 In	H	H	OFF	TUN	TUN	Mute	Mute	Mute	TUN	AV1 In
						M/H	VCR out	AV1 In	H	H	OFF	TUN	TUN	Mute	Mute	Mute	TUN	AV1 In
					C+.TU	L	VCR out	AV1 In	H	H	OFF	TUN	TUN	Mute	Mute	Mute	TUN	AV1 In
						M/H	VCR out	AV1 In	H	H	OFF	TUN	TUN	Mute	Mute	Mute	TUN	AV1 In
					AV1	L	VCR out	AV1 In	H	H	OFF	AV1	AV1	Mute	Mute	Mute	AV1 In	AV1 In
						M/H	VCR out	AV1 In	H	H	OFF	AV1	AV1	Mute	Mute	Mute	AV1 In	AV1 In
					AV2	L	VCR out	AV1 In	H	H	OFF	AV2	AV2	Mute	Mute	Mute	AV2 In	AV1 In
						M/H	VCR out	AV1 In	H	H	OFF	AV2	AV2	Mute	Mute	Mute	AV2 In	AV1 In
					AV3	L	VCR out	AV1 In	H	H	OFF	AV3	AV3	Mute	Mute	Mute	AV3 In	AV1 In
						M/H	VCR out	AV1 In	H	H	OFF	AV3	AV3	Mute	Mute	Mute	AV3 In	AV1 In
					SAT.NO	L	VCR out	AV1 In	H	H	OFF	SAT	SAT	Mute	Mute	Mute	SAT	AV1 In
						M/H	VCR out	AV1 In	H	H	OFF	SAT	SAT	Mute	Mute	Mute	SAT	AV1 In
					SAT.C+	L	VCR out	AV1 In	H	H	OFF	SAT	SAT	Mute	Mute	Mute	SAT	AV1 In
						M/H	VCR out	AV1 In	H	H	OFF	SAT	SAT	Mute	Mute	Mute	SAT	AV1 In
	DECODER	---	---	L	NO.TU	L	AV2 In	AV1 In	L	L	OFF	TUN	TUN	AV2 In	AV1 In	Mute	AV2 In	AV1 In
						M/H	AV2 In	AV1 In	M/H	L	ON	TUN	TUN	AV2 In	AV1 In	Mute	AV2 In	AV1 In
					C+.TU	L	AV2 In	AV1 In	L	L	OFF	TUN	TUN	AV2 In	AV1 In	Mute	AV2 In	AV1 In
						M/H	AV2 In	AV1 In	M/H	L	ON	TUN	TUN	AV2 In	AV1 In	Mute	AV2 In	AV1 In
					AV1	L	AV2 In	AV1 In	L	L	OFF	AV1	AV1	AV2 In	AV1 In	Mute	AV2 In	AV1 In
						M/H	AV2 In	AV1 In	M/H	L	ON	AV2	AV2	AV2 In	AV1 In	Mute	AV2 In	AV1 In
					AV2	L	AV2 In	AV1 In	L	L	OFF	AV2	AV2	AV2 In	AV1 In	Mute	AV2 In	AV1 In
						M/H	AV2 In	AV1 In	M/H	L	ON	AV2	AV2	AV2 In	AV1 In	Mute	AV2 In	AV1 In
					AV3	L	AV2 In	AV1 In	L	L	OFF	AV3	AV3	AV2 In	AV1 In	Mute	AV2 In	AV1 In
						M/H	AV2 In	AV1 In	M/H	L	ON	AV3	AV3	AV2 In	AV1 In	Mute	AV2 In	AV1 In
					SAT.NO	L	AV2 In	AV1 In	L	L	OFF	SAT	SAT	AV2 In	AV1 In	Mute	AV2 In	AV1 In
						M/H	AV2 In	AV1 In	M/H	L	ON	SAT	SAT	AV2 In	AV1 In	Mute	AV2 In	AV1 In
					SAT.C+	L	AV2 In	AV1 In	L	L	OFF	SAT	SAT	AV2 In	AV1 In	Mute	AV2 In	AV1 In
						M/H	AV2 In	AV1 In	M/H	L	ON	SAT	SAT	AV2 In	AV1 In	Mute	AV2 In	AV1 In
				H	NO.TU	L	VCR out	AV1 In	H	L	OFF	TUN	TUN	Mute	Mute	Mute	TUN	AV1 In
						M/H	VCR out	AV1 In	H	L	OFF	TUN	TUN	Mute	Mute	Mute	TUN	AV1 In
					C+.TU	L	VCR out	AV1 In	H	L	OFF	TUN	TUN	Mute	Mute	Mute	TUN	AV1 In
						M/H	VCR out	AV1 In	H	L	OFF	TUN	TUN	Mute	Mute	Mute	TUN	AV1 In
					AV1	L	VCR out	AV1 In	H	L	OFF	AV1	AV1	Mute	Mute	Mute	AV1 In	AV1 In
						M/H	VCR out	AV1 In	H	L	OFF	AV2	AV2	Mute	Mute	Mute	AV2 In	AV1 In
					AV2	L	VCR out	AV1 In	H	L	OFF	AV2	AV2	Mute	Mute	Mute	AV2 In	AV1 In
						M/H	VCR out	AV1 In	H	L	OFF	AV2	AV2	Mute	Mute	Mute	AV2 In	AV1 In
					AV3	L	VCR out	AV1 In	H	L	OFF	AV3	AV3	Mute	Mute	Mute	AV3 In	AV1 In
						M/H	VCR out	AV1 In	H	L	OFF	AV3	AV3	Mute	Mute	Mute	AV3 In	AV1 In
					SAT.NO	L	VCR out	AV1 In	H	L	OFF	SAT	SAT	Mute	Mute	Mute	SAT	AV1 In
						M/H	VCR out	AV1 In	H	L	OFF	SAT	SAT	Mute	Mute	Mute	SAT	AV1 In
					SAT.C+	L	VCR out	AV1 In	H	L	OFF	SAT	SAT	Mute	Mute	Mute	SAT	AV1 In
						M/H	VCR out	AV1 In	H	L	OFF	SAT	SAT	Mute	Mute	Mute	SAT	AV1 In

INPUT CONDITION							VIDEO OUTPUT RESULT							AUDIO OUTPUT RESULT				
POWER	AV2 SELECT	TV/ VTR	EE/ VV	OSD ON(H)	INPUT CH	AV2 PB(H)	AV1 OUT	AV2 OUT	AV1 PB(H)	AV2 PB(H)	RGB SW	VCR IN	VCR OUT	AV1 Out	AV2 Out	RF (C)	AV1 Out Selector	AV2 Out Selector
P.ON	EXT	TV	EE	L	NO.TU	---	VCR out	VCR out	L	L	OFF	TUN	TUN	TUN	TUN	TUN	TUN	INSEL
					C+.TU	---	VCR out	VCR out	L	L	OFF	TUN	TUN	TUN	TUN	TUN	TUN	INSEL
	or				AV1	---	VCR out	VCR out	L	L	OFF	AV1	AV1	AV1 In	AV1 In	AV1 In	AV1 In	INSEL
					AV2	---	VCR out	VCR out	L	L	ON	AV2	AV2	AV2 In	AV2 In	AV2 In	AV2 In	INSEL
	TIMER1				AV3	---	VCR out	VCR out	L	L	OFF	AV3	AV3	AV3 In	AV3 In	AV3 In	AV3 In	INSEL
					SAT.NO	---	VCR out	VCR out	L	L	OFF	SAT	SAT	SAT	SAT	SAT	SAT	INSEL
	or				SAT.C+	---	VCR out	VCR out	L	L	OFF	SAT	SAT	SAT	SAT	SAT	SAT	INSEL
				H	NO.TU	---	VCR out	VCR out	H	H	OFF	TUN	TUN	TUN	TUN	TUN	TUN	INSEL
	TIMER2				C+.TU	---	VCR out	VCR out	H	H	OFF	TUN	TUN	TUN	TUN	TUN	TUN	INSEL
					AV1	---	VCR out	VCR out	H	H	OFF	AV1	AV1	AV1 In	AV1 In	AV1 In	AV1 In	INSEL
					AV2	---	VCR out	VCR out	H	H	OFF	AV2	AV2	AV2 In	AV2 In	AV2 In	AV2 In	INSEL
					AV3	---	VCR out	VCR out	H	H	OFF	AV3	AV3	AV3 In	AV3 In	AV3 In	AV3 In	INSEL
					SAT.NO	---	VCR out	VCR out	H	H	OFF	SAT	SAT	SAT	SAT	SAT	SAT	INSEL
					SAT.C+	---	VCR out	VCR out	H	H	OFF	SAT	SAT	SAT	SAT	SAT	SAT	INSEL
		VTR	EE	L	NO.TU	---	VCR out	VCR out	H	H	OFF	TUN	TUN	TUN	TUN	TUN	TUN	INSEL
					C+.TU	---	VCR out	VCR out	H	H	OFF	TUN	TUN	TUN	TUN	TUN	TUN	INSEL
					AV1	---	VCR out	VCR out	H	H	OFF	AV1	AV1	AV1 In	AV1 In	AV1 In	AV1 In	INSEL
					AV2	L	VCR out	VCR out	H	H	ON	AV2	AV2	AV2 In	AV2 In	AV2 In	AV2 In	INSEL
						M/H	VCR out	VCR out	M/H	M/H	ON	AV2	AV2	AV2 In	AV2 In	AV2 In	AV2 In	INSEL
					AV3	---	VCR out	VCR out	H	H	OFF	AV3	AV3	AV3 In	AV3 In	AV3 In	AV3 In	INSEL
					SAT.NO	---	VCR out	VCR out	H	H	OFF	SAT	SAT	SAT	SAT	SAT	SAT	INSEL
					SAT.C+	---	VCR out	VCR out	H	H	OFF	SAT	SAT	SAT	SAT	SAT	SAT	INSEL
				H	NO.TU	---	VCR out	VCR out	H	H	OFF	TUN	TUN	TUN	TUN	TUN	TUN	INSEL
					C+.TU	---	VCR out	VCR out	H	H	OFF	TUN	TUN	TUN	TUN	TUN	TUN	INSEL
P.ON	EXT	VTR	EE	H	AV1	---	VCR out	VCR out	H	H	OFF	AV1	AV1	AV1 In	AV1 In	AV1 In	AV1 In	INSEL
					AV2	---	VCR out	VCR out	H	H	OFF	AV2	AV2	AV2 In	AV2 In	AV2 In	AV2 In	INSEL
					AV3	---	VCR out	VCR out	H	H	OFF	AV3	AV3	AV3 In	AV3 In	AV3 In	AV3 In	INSEL
					SAT.NO	---	VCR out	VCR out	H	H	OFF	SAT	SAT	SAT	SAT	SAT	SAT	INSEL
					SAT.C+	---	VCR out	VCR out	H	H	OFF	SAT	SAT	SAT	SAT	SAT	SAT	INSEL
			VV	---	NO.TU	---	VCR out	VCR out	M/H	M/H	OFF	TUN	PB	PB	PB	PB	TUN	INSEL
					C+.TU	---	VCR out	VCR out	M/H	M/H	OFF	TUN	PB	PB	PB	PB	TUN	INSEL
					AV1	---	VCR out	VCR out	M/H	M/H	OFF	AV1	PB	PB	PB	PB	AV1 In	INSEL
					AV2	---	VCR out	VCR out	M/H	M/H	OFF	AV2	PB	PB	PB	PB	AV2 In	INSEL
					AV3	---	VCR out	VCR out	M/H	M/H	OFF	AV3	PB	PB	PB	PB	AV3 In	INSEL
					SAT.NO	---	VCR out	VCR out	M/H	M/H	OFF	SAT	PB	PB	PB	PB	SAT	INSEL
					SAT.C+	---	VCR out	VCR out	M/H	M/H	OFF	SAT	PB	PB	PB	PB	SAT	INSEL
	DECODER	TV	EE	L	NO.TU	L	VCR out	AV1 In	L	L	OFF	TUN	TUN	TUN	AV1 In	TUN	TUN	AV1 In
						M/H	AV2 In	AV1 In	M/H	L	ON	TUN	TUN	AV2 In	AV1 In	TUN	AV2 In	AV1 In
					C+.TU	L	VCR out	TUN IN	L	L	OFF	TUN	TUN	TUN	TUN	TUN	TUN	TUN
						M/H	VCR out	TUN IN	L	L	OFF	AV2	AV2	AV2 In	TUN	AV2 In	AV2 In	TUN
					AV1	L	VCR out	AV1 In	L	L	OFF	AV1	AV1	AV1 In	AV1 In	AV1 In	AV1 In	AV1 In
						M/H	AV2 In	AV1 In	M/H	L	ON	AV2	AV2	AV2 In	AV1 In	AV2 In	AV2 In	AV1 In
					AV2	L	VCR out	AV1 In	L	L	ON	AV2	AV2	AV2 In	AV1 In	AV2 In	AV2 In	AV1 In
						M/H	AV2 In	AV1 In	M/H	L	ON	AV2	AV2	AV2 In	AV1 In	AV2 In	AV2 In	AV1 In
					AV3	L	VCR out	AV1 In	L	L	OFF	AV3	AV3	AV3 In	AV1 In	AV3 In	AV3 In	AV1 In
						M/H	AV2 In	AV1 In	M/H	L	ON	AV3	AV3	AV2 In	AV1 In	AV3 In	AV2 In	AV1 In
					SAT.NO	L	VCR out	AV1 In	L	L	OFF	SAT	SAT	SAT	AV1 In	SAT	SAT	AV1 In
						M/H	AV2 In	AV1 In	M/H	L	ON	SAT	SAT	AV2 In	AV1 In	SAT	AV2 In	AV1 In
					SAT.C+	L	VCR out	SAT IN	L	L	OFF	SAT	SAT	SAT	SAT	SAT	SAT	TUN
						M/H	VCR out	SAT IN	L	L	OFF	AV2	AV2	AV2 In	SAT	AV2 In	AV2 In	TUN
				H	NO.TU	L	VCR out	AV1 In	H	L	OFF	TUN	TUN	TUN	AV1 In	TUN	TUN	AV1 In
						M/H	VCR out	AV1 In	H	L	OFF	TUN	TUN	TUN	AV1 In	TUN	TUN	AV1 In
					C+.TU	L	VCR out	TUN IN	H	L	OFF	TUN	TUN	TUN	TUN	TUN	TUN	TUN
						M/H	VCR out	TUN IN	H	L	OFF	AV2	AV2	AV2 In	TUN	AV2 In	AV2 In	TUN
					AV1	L	VCR out	AV1 In	H	L	OFF	AV1	AV1	AV1 In	AV1 In	AV1 In	AV1 In	AV1 In
						M/H	VCR out	AV1 In	H	L	OFF	AV2	AV2	AV2 In	AV1 In	AV2 In	AV2 In	AV1 In
					AV2	L	VCR out	AV1 In	H	L	OFF	AV2	AV2	AV2 In	AV1 In	AV2 In	AV2 In	AV1 In
						M/H	VCR out	AV1 In	H	L	OFF	AV2	AV2	AV2 In	AV1 In	AV2 In	AV2 In	AV1 In
					AV3	L	VCR out	AV1 In	H	L	OFF	AV3	AV3	AV3 In	AV1 In	AV3 In	AV3 In	AV1 In
						M/H	VCR out	AV1 In	H	L	OFF	AV3	AV3	AV3 In	AV1 In	AV3 In	AV3 In	AV1 In
					SAT.NO	L	VCR out	AV1 In	H	L	OFF	SAT	SAT	SAT	AV1 In	SAT	SAT	AV1 In
						M/H	VCR out	AV1 In	H	L	OFF	SAT	SAT	SAT	AV1 In	SAT	SAT	AV1 In
					SAT.C+	L	VCR out	SAT IN	H	L	OFF	SAT	SAT	SAT	SAT	SAT	SAT	SAT
						M/H	VCR out	SAT IN	H	L	ON	AV2	AV2	AV2 In	SAT	AV2 In	AV2 In	SAT

INPUT CONDITION							VIDEO OUTPUT RESULT							AUDIO OUTPUT RESULT				
POWER	AV2 SELECT	TV/ VTR	EE/ VV	OSD ON(H)	INPUT CH	AV2 PB(H)	AV1 OUT	AV2 OUT	AV1 PB(H)	AV2 PB(H)	RGB SW	VCR IN	VCR OUT	AV1 Out	AV2 Out	RF (C)	AV1 Out Selector	AV2 Out Selector
P.ON	DECODER	VTR	EE	L	NO.TU	L	VCR out	AV1 In	H	L	OFF	TUN	TUN	TUN	AV1 In	TUN	TUN	AV1 In
						M/H	VCR out	AV1 In	H	L	OFF	TUN	TUN	TUN	AV1 In	TUN	TUN	AV1 In
					C+.TU	L	VCR out	TUN IN	H	L	OFF	TUN	TUN	TUN	TUN	TUN	TUN	TUN
						M/H	VCR out	TUN IN	M/H	L	ON	AV2	AV2	AV2 In	TUN	AV2 In	AV2 In	TUN
					AV1	L	VCR out	AV1 In	H	L	OFF	AV1	AV1	AV1 In	AV1 In	AV1 In	AV1 In	AV1 In
						M/H	VCR out	AV1 In	M/H	L	ON	AV2	AV2	AV2 In	AV1 In	AV2 In	AV2 In	AV1 In
					AV2	L	VCR out	AV1 In	H	L	ON	AV2	AV2	AV2 In	AV1 In	AV2 In	AV2 In	AV1 In
						M/H	VCR out	AV1 In	M/H	L	ON	AV2	AV2	AV2 In	AV1 In	AV2 In	AV2 In	AV1 In
					AV3	L	VCR out	AV1 In	H	L	OFF	AV3	AV3	AV3 In	AV1 In	AV3 In	AV3 In	AV1 In
						M/H	VCR out	AV1 In	M/H	L	OFF	AV3	AV3	AV3 In	AV1 In	AV3 In	AV3 In	AV1 In
					SAT.NO	L	VCR out	AV1 In	H	L	OFF	SAT	SAT	SAT	AV1 In	SAT	SAT	AV1 In
						M/H	VCR out	AV1 In	H	L	OFF	SAT	SAT	SAT	AV1 In	SAT	SAT	AV1 In
					SAT.C+	L	VCR out	SAT IN	H	L	OFF	SAT	SAT	SAT	SAT	SAT	SAT	SAT
						M/H	VCR out	SAT IN	M/H	L	ON	AV2	AV2	AV2 In	SAT	AV2 In	AV2 In	SAT
				H	NO.TU	L	VCR out	AV1 In	H	L	OFF	TUN	TUN	TUN	AV1 In	TUN	TUN	AV1 In
						M/H	VCR out	AV1 In	H	L	OFF	TUN	TUN	TUN	AV1 In	TUN	TUN	AV1 In
					C+.TU	L	VCR out	TUN IN	H	L	OFF	TUN	TUN	TUN	TUN	TUN	TUN	TUN
						M/H	VCR out	TUN IN	H	L	OFF	AV2	AV2	AV2 In	TUN	AV2 In	AV2 In	TUN
					AV1	L	VCR out	AV1 In	H	L	OFF	AV1	AV1	AV1 In	AV1 In	AV1 In	AV1 In	AV1 In
						M/H	VCR out	AV1 In	H	L	OFF	AV2	AV2	AV2 In	AV1 In	AV2 In	AV2 In	AV1 In
					AV2	L	VCR out	AV1 In	H	L	OFF	AV2	AV2	AV2 In	AV1 In	AV2 In	AV2 In	AV1 In
						M/H	VCR out	AV1 In	H	L	OFF	AV2	AV2	AV2 In	AV1 In	AV2 In	AV2 In	AV1 In
					AV3	L	VCR out	AV1 In	H	L	OFF	AV3	AV3	AV3 In	AV1 In	AV3 In	AV3 In	AV1 In
						M/H	VCR out	AV1 In	H	L	OFF	AV3	AV3	AV3 In	AV1 In	AV3 In	AV3 In	AV1 In
					SAT.NO	L	VCR out	AV1 In	H	L	OFF	SAT	SAT	SAT	AV1 In	SAT	SAT	AV1 In
						M/H	VCR out	AV1 In	H	L	OFF	SAT	SAT	SAT	AV1 In	SAT	SAT	AV1 In
					SAT.C+	L	VCR out	SAT IN	H	L	OFF	SAT	SAT	SAT	SAT	SAT	SAT	SAT
						M/H	VCR out	SAT IN	H	L	OFF	AV2	AV2	AV2 In	SAT	AV2 In	AV2 In	SAT
			VV	---	NO.TU	L	VCR out	AV1 In	M/H	L	OFF	TUN	PB	PB	AV1 In	PB	TUN	AV1 In
						M/H	VCR out	AV1 In	M/H	L	OFF	TUN	PB	PB	AV1 In	PB	TUN	AV1 In
					C+.TU	L	VCR out	TUN IN	M/H	L	OFF	TUN	PB	PB	TUN	PB	TUN	TUN
						M/H	VCR out	TUN IN	M/H	L	OFF	AV2	PB	PB	TUN	PB	AV2 In	TUN
					AV1	L	VCR out	AV1 In	M/H	L	OFF	AV1	PB	PB	AV1 In	PB	AV1 In	AV1 In
						M/H	VCR out	AV1 In	M/H	L	OFF	AV2	PB	PB	AV1 In	PB	AV2 In	AV1 In
					AV2	L	VCR out	AV1 In	M/H	L	OFF	AV2	PB	PB	AV1 In	PB	AV2 In	AV1 In
						M/H	VCR out	AV1 In	M/H	L	OFF	AV2	PB	PB	AV1 In	PB	AV2 In	AV1 In
					AV3	L	VCR out	AV1 In	M/H	L	OFF	AV3	PB	PB	AV1 In	PB	AV3 In	AV1 In
						M/H	VCR out	AV1 In	M/H	L	OFF	AV3	PB	PB	AV1 In	PB	AV3 In	AV1 In
					SAT.NO	L	VCR out	AV1 In	M/H	L	OFF	SAT	PB	PB	AV1 In	PB	SAT	AV1 In
						M/H	VCR out	AV1 In	M/H	L	OFF	SAT	PB	PB	AV1 In	PB	SAT	AV1 In
					SAT.C+	L	VCR out	SAT IN	M/H	L	OFF	SAT	PB	PB	SAT	PB	SAT	SAT
						M/H	VCR out	SAT IN	M/H	L	OFF	AV2	PB	PB	SAT	PB	AV2 In	SAT

NOTE: NO.TU: Tuner position, DECODER OFF (e.g. ARD) RGB SW : OFF = HIGH, ON=LOW

C+TU: Tuner position, DECODER ON (e.g. PREMI) EE : Non-Playback signal VV:Playback signal

***[M/H] :In case of Personal Planner standby(not External Link), AV1 PB must not output 'M' or 'H'**

443NT [L]	4.43 NTSC Ⓛ
A. COMP	AUDIO COMPONENT SIGNAL
A. COMPO	AUDIO COMPONENT SIGNAL
A. D.P [L]	AUDIO DUBBING PAUSE Ⓛ
A. D/L [L]	AUDIO DUBBING PAUSE Ⓛ
A. DEF [S]	AUDIO DEFEAT
A. DEF [S] [L]	AUDIO DEFEAT
A. DUB P [L]	AUDIO DUBBING PAUSE Ⓛ
A. DUB [H]	AUDIO DUBBING Ⓗ
A. ERASE	AUDIO ERASE
A. H. SW	AUDIO HEAD SWITCHING PULSE
A. HEAD [R]	AUDIO HEAD (REC)
A. HEAD [W]	AUDIO HEAD (PLAY)
A. IN [L]	AUDIO INPUT (L)
A. IN [R]	AUDIO INPUT (R)
A. MUT [H]	AUDIO MUTE Ⓗ
A. MUTE [H]	AUDIO MUTE Ⓗ
A. OUT [L]	AUDIO OUTPUT (L)
A. OUT [R]	AUDIO OUTPUT (R)
A. RF OUT	AUDIO RF SIGNAL OUTPUT
A/VS/S. DATA	AV SW/SERIAL DATA
AC ONLINE	AC ONLINE
AC. O/EE. H	AC ONLINE/EE Ⓗ
AFC S C	AFC S CURVE
AFC [S]	AFC S CURVE
AFC. DEF	AFC DEFEAT
ARFC OUT	AUDIO RF SIGNAL OUTPUT
ART. V	ARTIFICIAL VERTICAL SYNC SIGNAL
ART. V. MM	ARTIFICIAL VERTICAL SYNC SIGNAL MONO MULTI
ART. V/H/N	ARTIFICIAL VERTICAL SYNC SIGNAL Ⓗ/NORMAL
AT. V/H/N	ARTIFICIAL VERTICAL SYNC SIGNAL
ATSW/TEST/NOR/SE	TEST/NORMAL/SERVICE
AUDIO IN [L]	AUDIO INPUT (L)
AUDIO IN [R]	AUDIO INPUT (R)
AUDIO OUT [L]	AUDIO OUTPUT (L)
AUDIO OUT [R]	AUDIO OUTPUT (R)
AUDIO SELECT [H]	AUDIO SELECT Ⓗ
AUDIO. L	AUDIO (L)
AUDIO. R	AUDIO (R)
AV CNT	AV CONTROL
AV CTL	AV CONTROL
AV CTL/S. CLK	AV CONTROL/SERIAL CLOCK
AV. C.M.	AV CONTROL MODE
AVCNT/METER. R	AV CONTROL/LEVEL METER (R)
AVSW/METER. L	AV SW/LEVEL METER (L)
B MODE. H	B MODE Ⓗ
B.G.P	BURST GATE PULSE
BACKUP 5V	BACK UP 5V
BAND. U.E.	BAND U
BANDVL. D	BAND VL
BI/MI [L]	BILINGUAL/MIX Ⓛ
BIL	BILINGUAL
BIL [L]	BILINGUAL Ⓛ
BIL. [H]	BILINGUAL Ⓗ
BIL/M1 [L]	BILINGUAL Ⓛ
BS CLOCK	BS CLOCK
BS DATA	BS DATA
BS LCH IN	BS L CHANNEL INPUT
BS MIX [H]	BS MIX Ⓗ
BS MON [H]	BS MONITOR Ⓗ
BS MONI [H]	BS MONITOR Ⓗ
BS RCH IN	BS R CHANNEL INPUT
BS VIDEO	BS VIDEO SIGNAL
BS VIDEO/BS1	BS VIDEO SIGNAL
BS [H]	BS Ⓗ
BS. LEVEL	BS LEVEL
BS. M [H]	BS MONITOR Ⓗ
BS/VTR [H]	BS/VTR Ⓗ
BUS CLK	BUS CLOCK
BUS LSN	BUS LISTEN
BUS TLK	BUS TALK
BUZZER	BUZZER
CAP EC	CAPSTAN TORQUE CONTROL
CAP M GND	CAPSTAN MOTOR GND
CAP. ET	CAPSTAN TORQUE CONTROL
CAP. FG1	CAPSTAN FG1 PULSE
CAP. FG2	CAPSTAN FG2 PULSE
CAS. SW	CASSETTE SW
CCN	PLAYBACK CONTROL SIGNAL (–)
CCP	PLAYBACK CONTROL SIGNAL (+)
CHM	CONTROL SIGNAL (+)
CHP	CONTROL SIGNAL (–)
CINEM [L]	CINEMA Ⓛ
CINEMA [L]	CINEMA Ⓛ
CINEMA/MIX	CINEMA/MIX
CKL	RATCH LOCK
CKS	SHIFT LOCK
CL	CLOCK
CLK	CLOCK
CLK (C.G)	CLOCK
CLOCK. IN	CLOCK INPUT
CLP	CLAMP
COL/B/W/NOR	COLOUR/BLACK & WHITE/NORMAL
COLOR [H]	COLOUR Ⓗ
CONV	CONVERTOR
CS	CHIP SELECT
CTL GND	CONTROL GND
CTL HEAD [+]	CONTROL HEAD (+)
CTL HEAD [–]	CONTROL HEAD (–)
CTL [+]	CONTROL HEAD (+)
CTL [–]	CONTROL HEAD (–)
CUE BIAS	CUE BIAS
CURRENT LIM	CURRENT LIMMITER
CYL ET	CYLINDER TORQUE CONTROL

CYL GND	CYLINDER GND
D.F.M. REC [H]	DELAIED FM RECORDING Ⓗ
D. FM REC [L]	DELAIED FM RECORDING Ⓛ
D. GND	DIGITAL GND
D. REC [H]	DELAYED RECORDING Ⓗ
D4/S. LED	D4/STILL LED
D4/STILLED	D4/STILL LED
DAC [CLK]	TUNER DAC (CLOCK)
DAC/FSCS	TUNER DAC/FS CHIP SELECT
DAREC [H]	DELAYED AUDIO RECORDING Ⓗ
DATA	DATA
DECODER [L]	DECODER (L)
DECODER [R]	DECODER (R)
DEW	DEW
DEW SNS	DEW SENSOR
DFMRE [H]	DELAYED FM AUDIO RECORDING Ⓗ
E. REC 5V	EXCEPT RECORDING 5V
EC	ERROR TORQUE CONTROL
ECR	ERROR TORQUE CONTROL REFERENCE VOLTAGE
EDT TRIG [L]	EDIT TRIGGER Ⓛ
EDIT [H]	EDIT Ⓗ
EE [H]	EE Ⓗ
EE [H]/INS [M]	EE Ⓗ/INSERT Ⓜ
EE. VV. TR	EE/VV/TRICK PLAY
EJECT. PO	EJECT POSITION
EJECT/VDET	EJECT/REVERSE SLOW LOCK
ENV. SEL	ENVELOPE SELECT
ENVE. OUT	ENVELOPE OUTPUT
ENVE. SEL	ENVELOPE SELECT
ENV SELECT	ENVELOPE SELECT
EP [H]	LP Ⓗ
EP/LP [H]	LP Ⓗ
EP/LP/SP	LP/SP
EP/SS [H]	LP/SLOW/STILL/STOP Ⓗ
EPROMCS	EPROM CHIP SELECT
EX. REC 5V	EXCEPT RECORDING 5V
FF/REW [L]	FIRST FORWARD/REWIND Ⓛ
FG1 IN	FG1 PULSE INPUT
FG2 IN	FG2 PULSE INPUT
FILTER ADJUSTMENT	FILTER ADJUSTMENT
FLY ERASE [H]	FLYING ERASE HEAD ON Ⓗ
FLY ON [H]	FLYING ERASE HEAD ON Ⓗ
FLY. E [H]	FLYING ERASE HEAD ON Ⓗ
FM MUT [H]	FM AUDIO MUTE Ⓗ
FM MUTE [H]	FM AUDIO MUTE Ⓗ
FM OUT [L]	FM OUTPUT (L)
FM OUT [R]	FM OUTPUT (R)
FM PACK OUT [L]	FM PACK OUTPUT (L)
FM PACK OUT [R]	FM PACK OUTPUT (R)
FM/BS SEL [L]	FM/BS SELECT (L)
FM/BS SEL [R]	FM/BS SELECT (R)
FS. CLK	FS CLOCK
FUL. E [H]	FULL ERASE HEAD ON Ⓗ
FULL. E [H]	FULL ERASE HEAD ON Ⓗ

FULL. E. 12V	FULL ERASE 12V
GND [A]	GND (ANALOG)
GND [TU]	GND (TUNER)
GND/N. SW. 12V	GND/NON SW 12V
H. SYNC	HORIZONTAL SYNC
H. AMP. SW	HEAD AMP SW PULSE
H. P <R>	HEAD PHONE (R)
H. P <L>	HEAD PHONE (L)
H. P GND	HEAD PHONE GND
H. P OUT [L]	HEAD PHONE OUTPUT (L)
H. P OUT [R]	HEAD PHONE OUTPUT (R)
H. SW	HEAD SW PULSE
HEAD PHONE [L]	HEAD PHONE (L)
HEAD PHONE [R]	HEAD PHONE (R)
HEAD SW	HEAD SW
HEATER [+]	HEATER (+)
HEATER [–]	HEATER (–)
HSS	HORIZONTAL SYNC SIGNAL
HTR [+]	HEATER (+)
HTR [–]	HEATER (–)
I RFE	REFERENCE CURRENT
ICL	CONTROL AGC CIRCUIT
IF	INTERMEDIATE FREQUENCY
IN SELA1	INPUT SELECT A1 POSITION
IN SELA2	INPUT SELECT A2 POSITION
IN SELA3	INPUT SELECT A3 POSITION
INS L/R [L]	INSERT Lch/Rch Ⓛ
INS. [H]	INSERT Ⓗ
INSEL A1	INPUT SELECT A1 POSITION
INSEL A2	INPUT SELECT A2 POSITION
INSERT	INSERT
INSERT [H]	INSERT Ⓗ
IO CS	INPUT/OUTPUT CHIP SELECT
JOG1	JOG1
JOG S3 LED/FOWRD	JOG LED/FORWARD LED
JOG/F. LED	JOG LED/FORWARD LED
JSB [H]	JSB Ⓗ
JST. CLCK	JUST CLOCK
JST. CLK	JUST CLOCK
JST. CLOCK	JUST CLOCK
L. OUT	Lch OUTPUT
L. CH [H]	Lch Ⓗ
L. CH [L]	Lch Ⓛ
LED (MAIN)	LED (MAIN)
LED (STEREO)	LED (STEREO)
LED (SUB)	LED (SUB)
LED CKL	LED SERIAL CLOCK
LED CKS	LED SERIAL CLOCK
LED DATA	LED SERIAL DATA
LINE IN 1 [L]	LINE INPUT 1 (L)
LINE IN 1 [R]	LINE INPUT 1 (R)
LINE IN 2 [L]	LINE INPUT 2 (L)
LINE IN 2 [R]	LINE INPUT 2 (R)
LINE IN V	LINE INPUT VIDEO
LINE IN [L]	LINE INPUT (L)

LINE IN [R]	LINE INPUT (R)
LINE OUT [L]	LINE OUTPUT (L)
LINE OUT [R]	LINE OUTPUT (R)
LP [H]	LP Ⓗ
LPTRI [L]	LP TRICK PLAY Ⓛ
Lch/A. DUB	Lch/AUDIO DUBBING
M GND	MOTOR GND
M REG	MOTOR REGULATOR
MAIN OUT	MAIN OUTPUT
MAIN [L]	MAIN Ⓛ
MAIN/MONO	MAIN/MONAURAL
MAX IN	MAXIMAM INPUT
MES [H]	MESECAM Ⓗ
MESE [H]	MESECAM Ⓗ
MESE [L]	MESECAM Ⓛ
METER 5V	LEVEL METER 5V
METER [L]	LEVEL METER (L)
METER [R]	LEVEL METER (R)
METER. L/AVS	LEVEL METER (L)
METER. R/AVC	LEVEL METER (R)
MI/BI [L]	MIX Ⓗ/BILIGUAL
MIC GND	MIC GND
MIC IN	MIC INPUT
MIC IN [L]	MIC INPUT (L)
MIC IN [R]	MIC INPUT (R)
MIC [H]	MIC Ⓗ
MIX [H]	MIX Ⓗ
MIX [H]/CINEMA [L]	MIX Ⓗ/CINEMA SOUND Ⓛ
MIX/CINE	MIX Ⓗ/CINEMA SOUND Ⓛ
MIX/CINEMA [L]	MIX Ⓗ/CINEMA SOUND Ⓛ
MN. H/M. L	MONAURAL Ⓗ/MAIN Ⓛ
MN. H/MAI. L	MONAURAL Ⓗ/MAIN Ⓛ
MN2/MES. L	MONAURAL 2/MESECAM Ⓛ
MODE SEL	AUDIO MODE SELECT
MODE SW	AUDIO MODE SW
MODE. S. IN	AUDIO MODE SELECT INPUT
MODE. S. OUT	AUDIO MODE SELECT OUTPUT
MONO [H]	MONAURAL Ⓗ
MONO [H]/MAIN [L]	MONAURAL Ⓗ/MAIN Ⓛ
MONO2 [L]	MONAURAL 2
MONO2/MESE [FM(L)]	MONAURAL 2/MESECAM (FM Ⓛ)
MOTOR GND	MOTOR GND
MUTE	MUTE
N. A. REC [L]	NORMAL AUDIO RECORDING
N. SW 12V	NON SW 12V
N. SW. 5. DET	NON SW 5V DETECT
NICAM	NICAM
NICAM [L]	NICAM Ⓛ
NOL [H]	PAL Ⓗ/4.43 NTSC Ⓜ/3.58 NTSC Ⓛ
NOR/SOFT [H]	NORMAL/SOFT TAPE PLAY Ⓗ
NORMAL [H]	NORMAL Ⓗ
NR BIAS	NR BIAS
NTSC [L]	NTSC Ⓛ
OCH	CONTROL AGC CIRCUIT
OUT	OUTPUT

P-OFF [H]	POWER OFF Ⓗ
P-OFF [L]	POWER OFF Ⓛ
P. FAIL	POWER FAILURE DETECT
P. OFF [H]	POWER OFF Ⓗ
P. OFF [L]	POWER OFF Ⓛ
PAL [H]	PAL Ⓗ
PAL [L]/NTSC [H]	PAL Ⓛ/NTSC Ⓗ
PB ADJ OUT	PLAYBACK ADJUST OUTPUT
PB OUT	PLAYBACK OUTPUT
PB. H	PLAYBACK Ⓗ
PFG	PG/FG
PHOTSN +B	PHOTO SENSOR +B
PICT. CNT	PICTURE CONTROL
PLAY LED/RVS LED	PLAY LED/REVERSE LED
PLAY. PO	PLAY POSITION
PLAY/R. LED	PLAY LED/REVERSE LED
PLY/DEW	PLAY/DEW Ⓗ
POWER OFF [L]	POWER OFF Ⓛ
PREROLL [H]	PREROLL Ⓗ
PWRFAIL	POWER FAILURE DETECT
R. CH [H]	Rch Ⓗ
R. CH [L]	Rch Ⓛ
R. ST	RESET
R/S/F	REVERSE Ⓗ/STOP Ⓜ/FORWARD Ⓛ
RCH [H]	Rch Ⓗ
REC 12V	RECORDING 12V
REC CHROMA	RECORDING CHROMINANCE SIGNAL
REC H	RECORDING Ⓗ
REC IN	RECORDING INPUT
REC OUT [L]	RECORDING OUTPUT Ⓛ
REC START	RECORDING START
REC VR [C]	RECORDING VOLUME (COMMON)
REC VR [L]	RECORDING VOLUME (L)
REC VR [R]	RECORDING VOLUME (R)
REC Y	RECORDING LUMINANCE SIGNAL
REC [H]	RECORDING Ⓗ
REC. C	RECORDING CHROMINANCE SIGNAL
REC. Y	RECORDING LUMINANCE SIGNAL
REC/EE CTL	RECORDING/EE CONTROL
REEL-T	REEL PULSE (TAKE-UP)
REEL-S	REEL PULSE (SUPPLY)
REGULATOR FILTER	REGULATOR FILTER
RESET	RESET
REV M F/R	REVIEW MOTOR FORWARD/REVERSE
REV M V1	REVIEW MOTOR V1
REV M V2	REVIEW MOTOR V2
REV MOTOR F/R	REVIEW MOTOR FORWARD/REVERSE
REV MOTOR V1	REVIEW MOTOR V1
REV MOTOR V2	REVIEW MOTOR V2
REV MOTOR [+]	REVIEW MOTOR (+)
REV MOTOR [–]	REVIEW MOTOR (+)
REV. M. GND	REVIEW MOTOR GND
RF. CHROMA	RF CHROMINANCE SIGNAL

RF OUT	RF OUTPUT
RF Y	RF LUMINANCE SIGNAL
RF. Y. IN	RF LUMINANCE SIGNAL INPUT
RF. Y. OUT	RF LUMINANCE SIGNAL OUTPUT
ROTAR. SW	ROTARY SW
ROTARY	ROTARY SW
RST	RESET
RST [L]	RESET Ⓛ
Rch/INST	Rch/INSERT
S IN	SERIAL DATA INPUT
S OUT	SERIAL DATA OUTPUT
S-PHOTO	SUPPLY PHOTO TRANSISTOR
S-RL. PLS	SUPPLY REEL PULSE
S. CLK	SERIAL CLOCK
S. CLK/AV	SERIAL CLOCK/AV
S. DATA	SERIAL DATA
S. DATA/A	SERIAL DATA
S. PHOTO	SUPPLY PHOTO TRANSISTOR
S. TAB [L]	SAFETY TAB SW ON Ⓛ
S/P/N	SECAM/PAL/NTSC
SC IN	SERIAL CLOCK INPUT
SC OUT	SERIAL CLOCK OUTPUT
SCK SELECT	SERIAL CLOCK SELECT
SEL OUT [L]	SELECT OUTPUT (L)
SEL OUT [R]	SELECT OUTPUT (R)
SHUTTLE 1	SHUTTLE 1
SIF	SOUND INTERMEDIATE FREQUENCY
SLMUT [H]	INPUT SELECT MUTE Ⓗ
SLNID [+]	SOLENOID (+)
SLNID [–]	SOLENOID (–)
SLW TR. MM	SLOW TRACKING MONO MULTI
SLW TR. REF	SLOW TRACKING REFERENCE VOLTAGE
SNS. GND	SENSOR GND
SOFT [H]	SOFT TAPE PLAY Ⓗ
SOFT [H]/NORMAL	SOFT TAPE PLAY Ⓗ/NORMAL Ⓗ
SOLENOID ON [L]	SOLENOID ON Ⓛ
SP [H]	SP Ⓗ
SP/L/SLP	SP/LP
SSS [L]	SLOW/STILL/STOP
STEREO LED	STEREO LED
STEREO [H]	STEREO Ⓗ
STEREO [L]	STEREO Ⓛ
STOP. PO	STOP POSITION
STOP/5V	STOP POSITION/5V
STOP1/TAPE SEL	STOP1 POSITION/TAPE SELECT
STOP1/PAL:ST	STOP1 POSITION/PAL
STOP2. PO	STOP 2 POSITION
STOP2/S-TAB	STOP 2 POSITION/SAFETY TAB SW
STREO [H]	STEREO Ⓗ
SUB BIAS	SUB BIAS
SUB. SW	SUB SW
SVHS CAS [L]	S-VHS CASSETTE Ⓛ
SW. 5. DET	SW 5V DETECT
SYNC [L]	SYNC Ⓛ
SYSCON 5V	SYSTEM CONTROL 5V
SYSTEM	SYSTEM SW
T-PHOTO	TAKE-UP PHOTO TRANSISTOR
T-RL. PLS	TAKE-UP REEL PULSE
T. BUSCLK	TIMER BUS CLOCK
T. BUSLSN	TIMER BUS LISTEN
T. BUSTLK	TIMER BUS TALK
T. END [L]	TAPE END Ⓛ
T. PHOTO	TAKE-UP PHOTO TRANSISTOR
TAPE END [L]	TAPE END Ⓛ
TAPE END [L]/CAM	TAPE END Ⓛ/CAMERA PAUSE
TEST	TEST MODE
TPZ	TRAPEZOIDAL WAVE CIRCUIT
TRIC [L]	TRIC PLAY Ⓛ
TRICK [L]	TRIC PLAY Ⓛ
TRK. ENV	AUTO TRACKING ENVELOPE DETECT
TU. AUDIO	TUNER AUDIO
TU. GND	TUNER GND
TU. V. IN	TUNER VIDEO SIGNAL INPUT
TU. VIDEO	TUNER VIDEO
TUN NOR IN	TUNER NORMAL INPUT
TUN R	TUNER AUDIO (R)
TUN. AUDIO IN	TUNER AUDIO INPUT
TUNER 12V	TUNER 12V
TUNER L	TUNER AUDIO (L)
TUNER V IN	TUNER VIDEO SIGNAL INPUT
TUNER [L]	TUNER AUDIO (L)
TUNER [N]	TUNER AUDIO (NORMAL)
TUNER [R]	TUNER AUDIO (R)
TUNER. 12	TUNER 12V
TUOFF [H]	TUNER OFF Ⓗ
TV. AUDIO	TV AUDIO
TV/VTR	TV/VTR
TXTON [L]	TEXT ON Ⓛ
U. REG45V	UNREGULATOR 45V
UNREG	UNREGULATOR
UNREG19V	UNREGULATOR 19V
V. REF	REFERENCE VOLTAGE
V. EE [H]	VIDEO EE Ⓗ
V. EE [L]	VIDEO EE Ⓛ
VCO REF	REFERENCE OSCILLATER
VD. IN	VIDEO SIGNAL INPUT
VD. OUT	VIDEO SIGNAL OUTPUT
VIDEO EE [L]	VIDEO EE Ⓛ
VIDEO IN	VIDEO SIGNAL INPUT
VIDEO OUT	VIDEO SIGNAL OUTPUT
VM	MOTOR VOLTAGE
VM DOWN [L]	MOTOR VOLTAGE DOWN Ⓛ
VSS	VERTICAL SYNC SIGNAL
VTR [H]	VTR Ⓗ
VTR. 12V	VTR 12V
X IN	OSCILLATOR INPUT
X OUT	OSCILLATOR OUTPUT

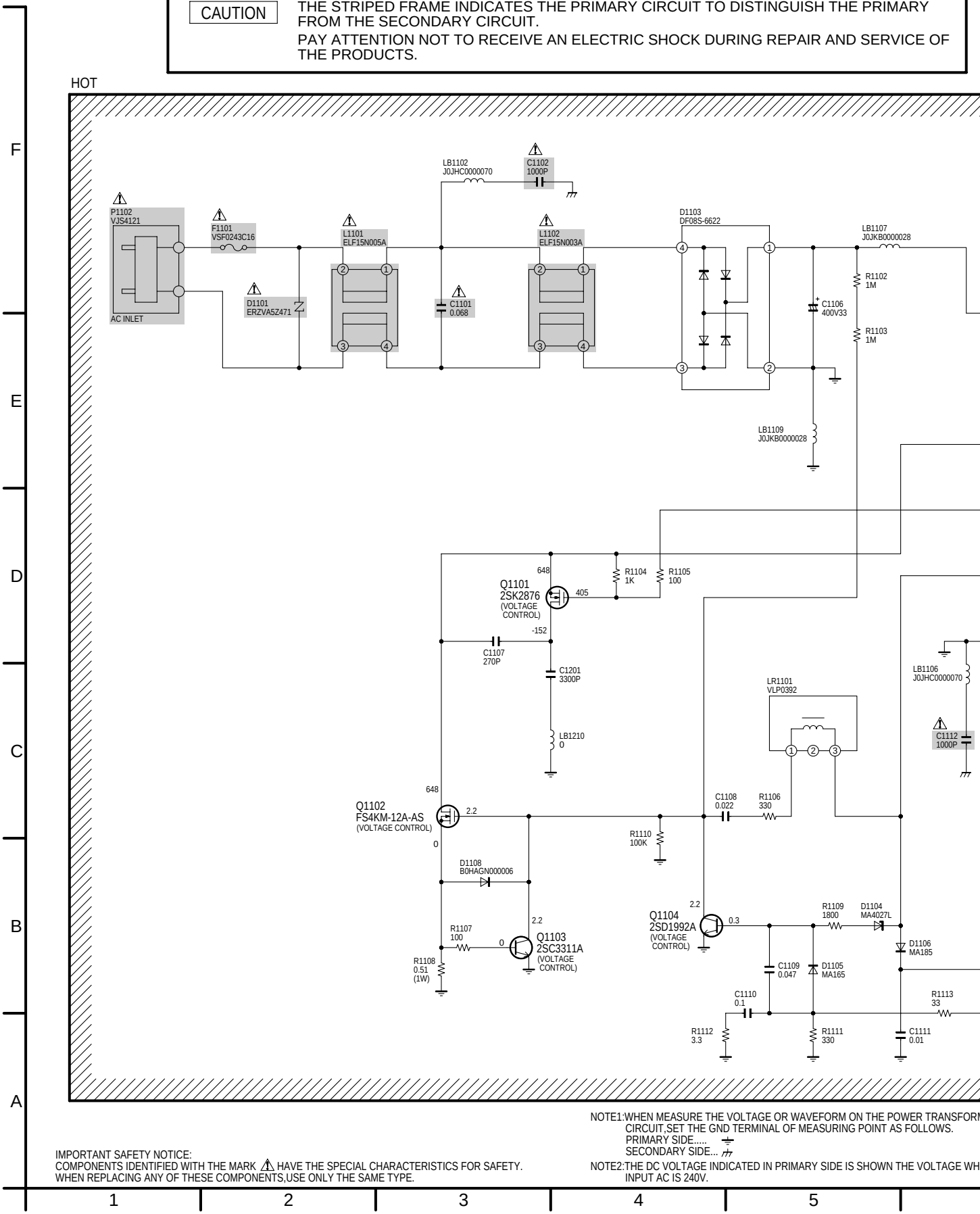
8 SCHEMATIC DIAGRAMS

8.1. POWER TRANSFORMER SECTION IN MAIN SCHEMATIC DIAGRAM

CAUTION

THE STRIPED FRAME INDICATES THE PRIMARY CIRCUIT TO DISTINGUISH THE PRIMARY FROM THE SECONDARY CIRCUIT.

PAY ATTENTION NOT TO RECEIVE AN ELECTRIC SHOCK DURING REPAIR AND SERVICE OF THE PRODUCTS.



IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,USE ONLY THE SAME TYPE.

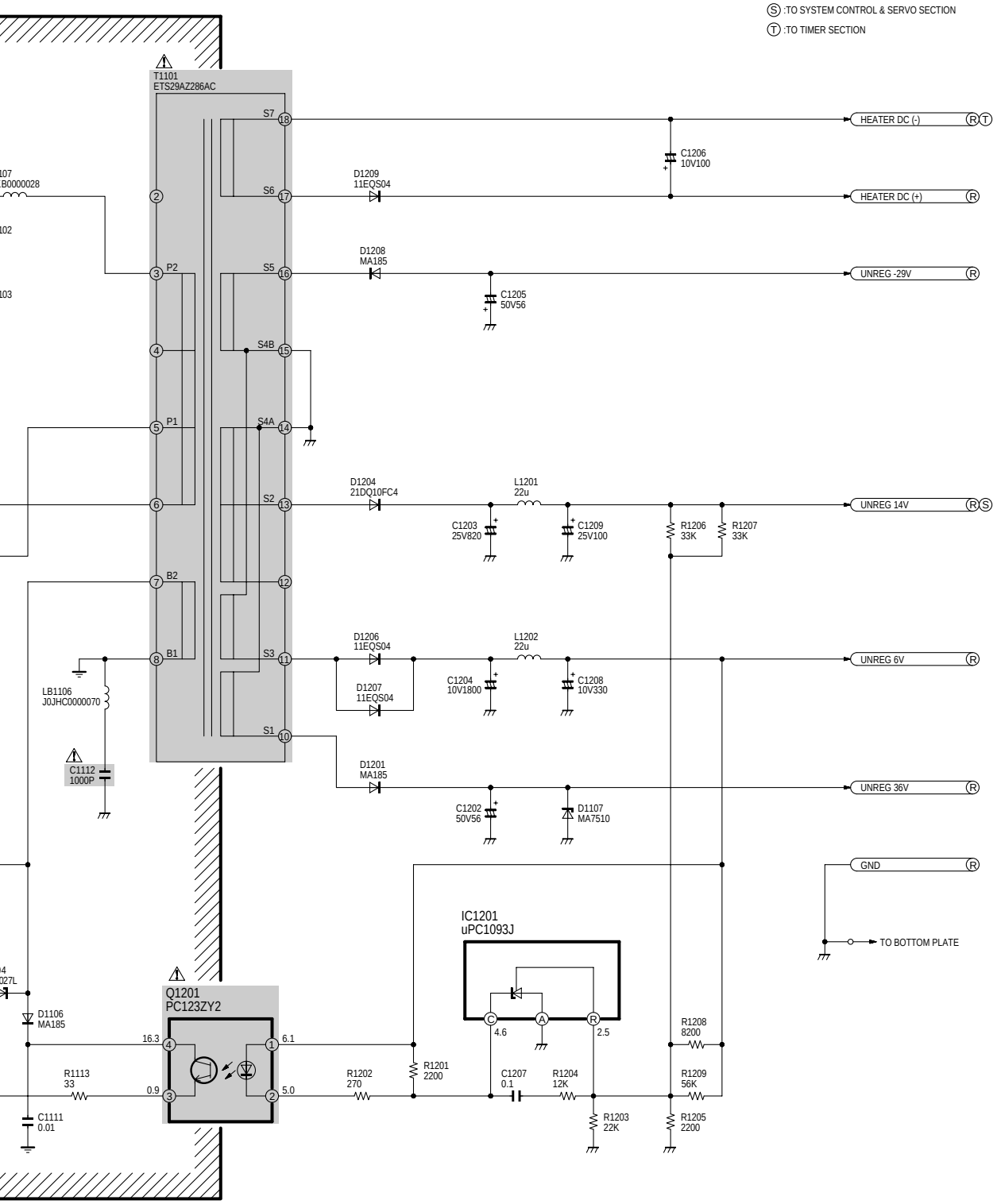
NOTE1:WHEN MEASURE THE VOLTAGE OR WAVEFORM ON THE POWER TRANSFORM
CIRCUIT,SET THE GND TERMINAL OF MEASURING POINT AS FOLLOWS.
PRIMARY SIDE..... ⏚
SECONDARY SIDE... ⏚

NOTE2:THE DC VOLTAGE INDICATED IN PRIMARY SIDE IS SHOWN THE VOLTAGE WH
INPUT AC IS 240V.

M

RIMARY
ERVICE OF

Ⓡ :TO POWER SUPPLY/RF SECTION
Ⓢ :TO SYSTEM CONTROL & SERVO SECTION
Ⓣ :TO TIMER SECTION



E POWER TRANSFORMER
NT AS FOLLOWS.

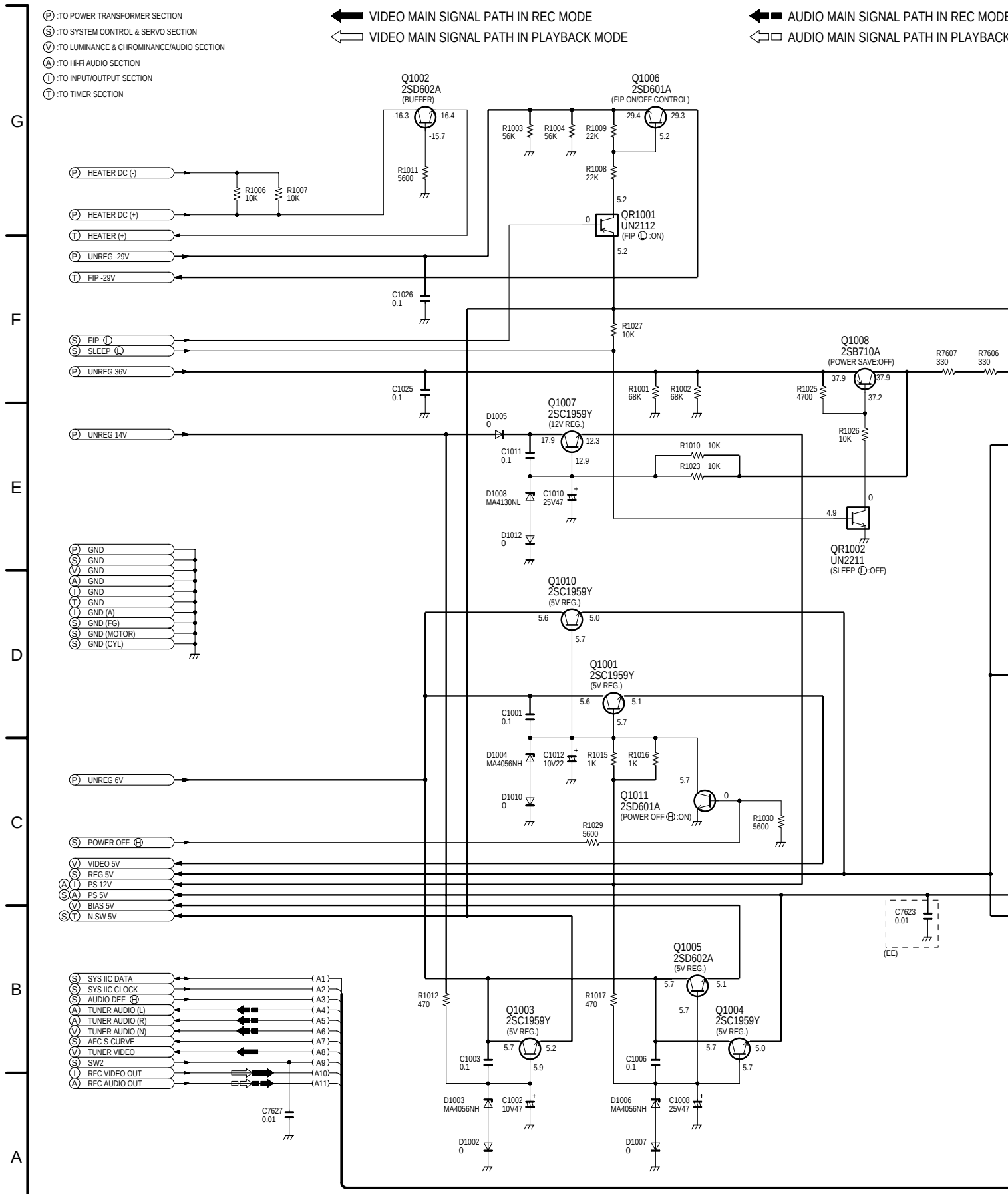
WN THE VOLTAGE WHEN

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.
NOTE:THE MEASURMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NV-FJ623EG/EGY,FJ628EE
POWER TRANSFORMER
SECTION SCHEMATIC DIAGRAM

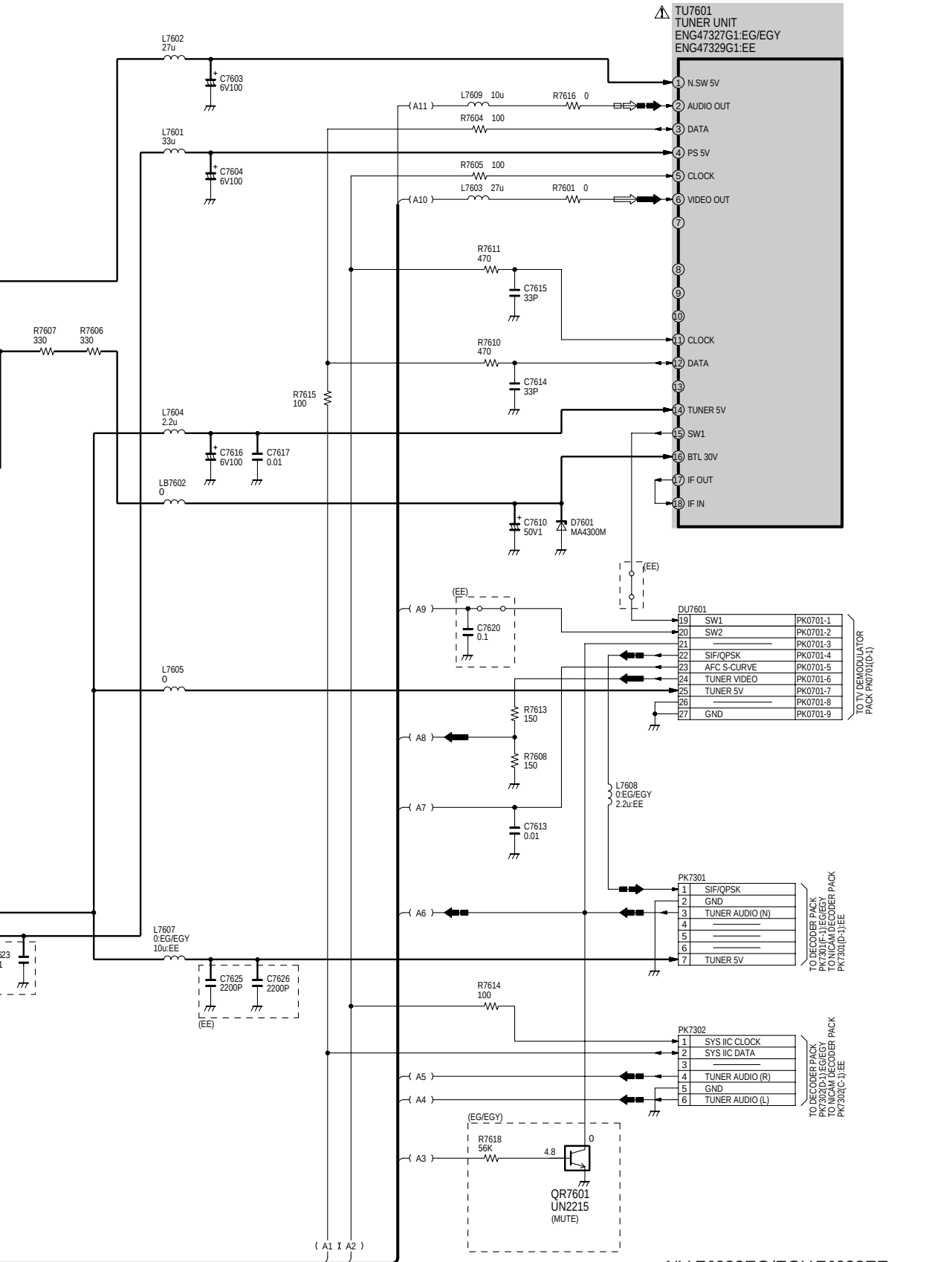
6 7 8 9 10

8.2. POWER SUPPLY/ RF SECTION IN MAIN SCHEMATIC DIAGRAM



PATH IN REC MODE

PATH IN PLAYBACK MODE



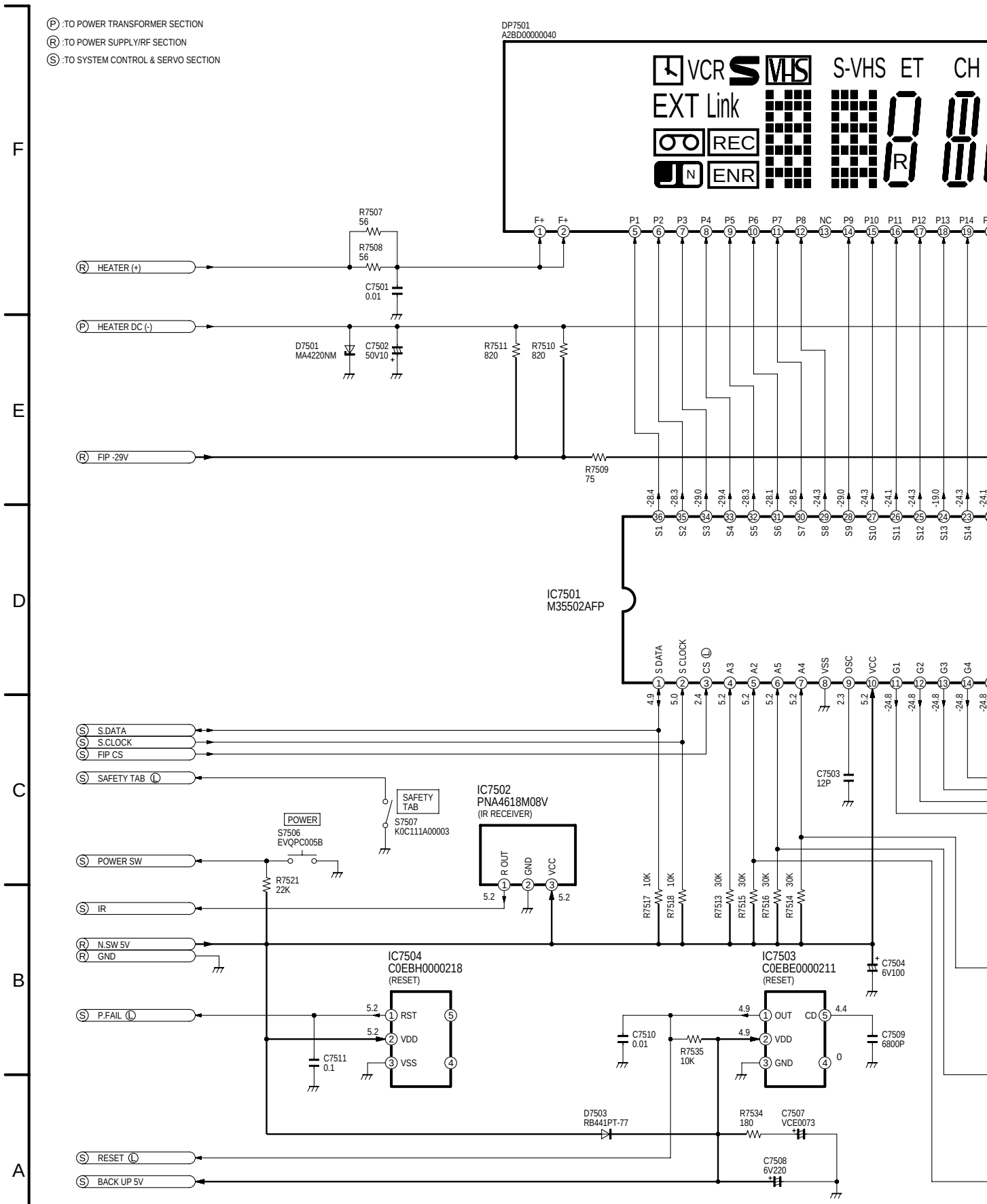
GRAM IS STOP MODE.

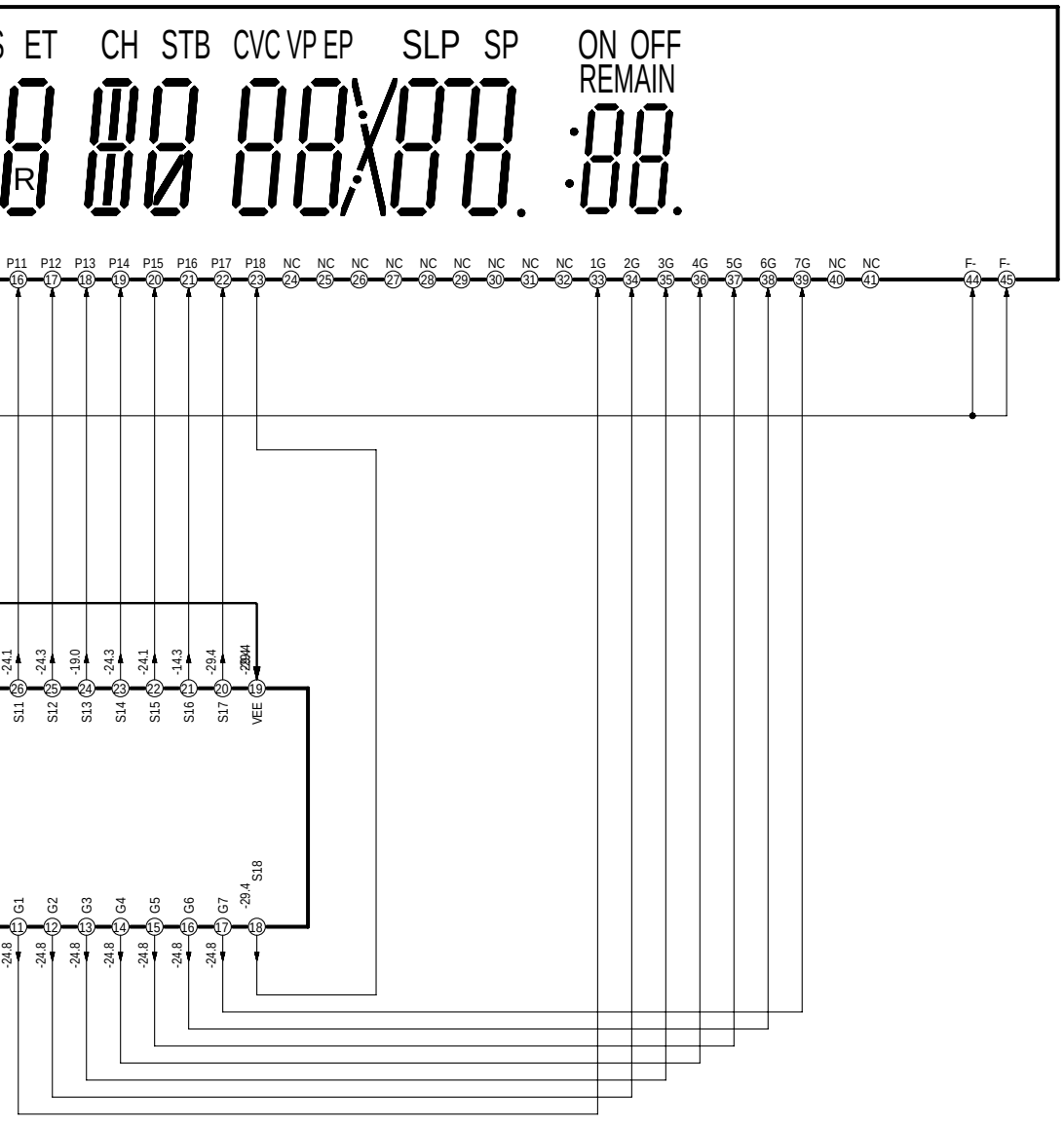
NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

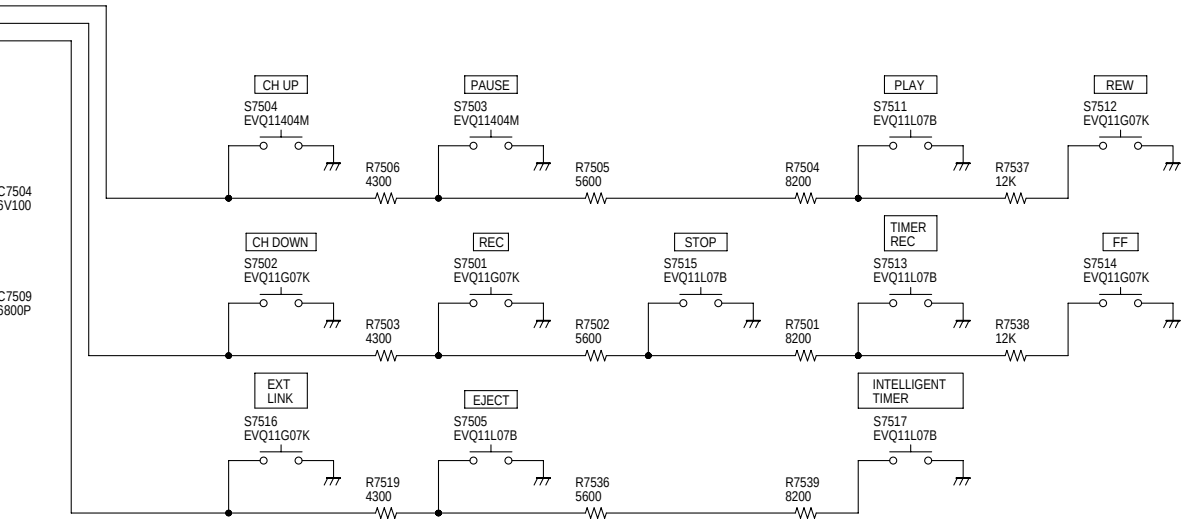
NV-FJ623EG/EGY,FJ628EE
POWER SUPPLY/RF
SECTION SCHEMATIC DIAGRAM

6 | 7 | 8 | 9 | 10

8.3. TIMER SECTION IN MAIN SCHEMATIC DIAGRAM





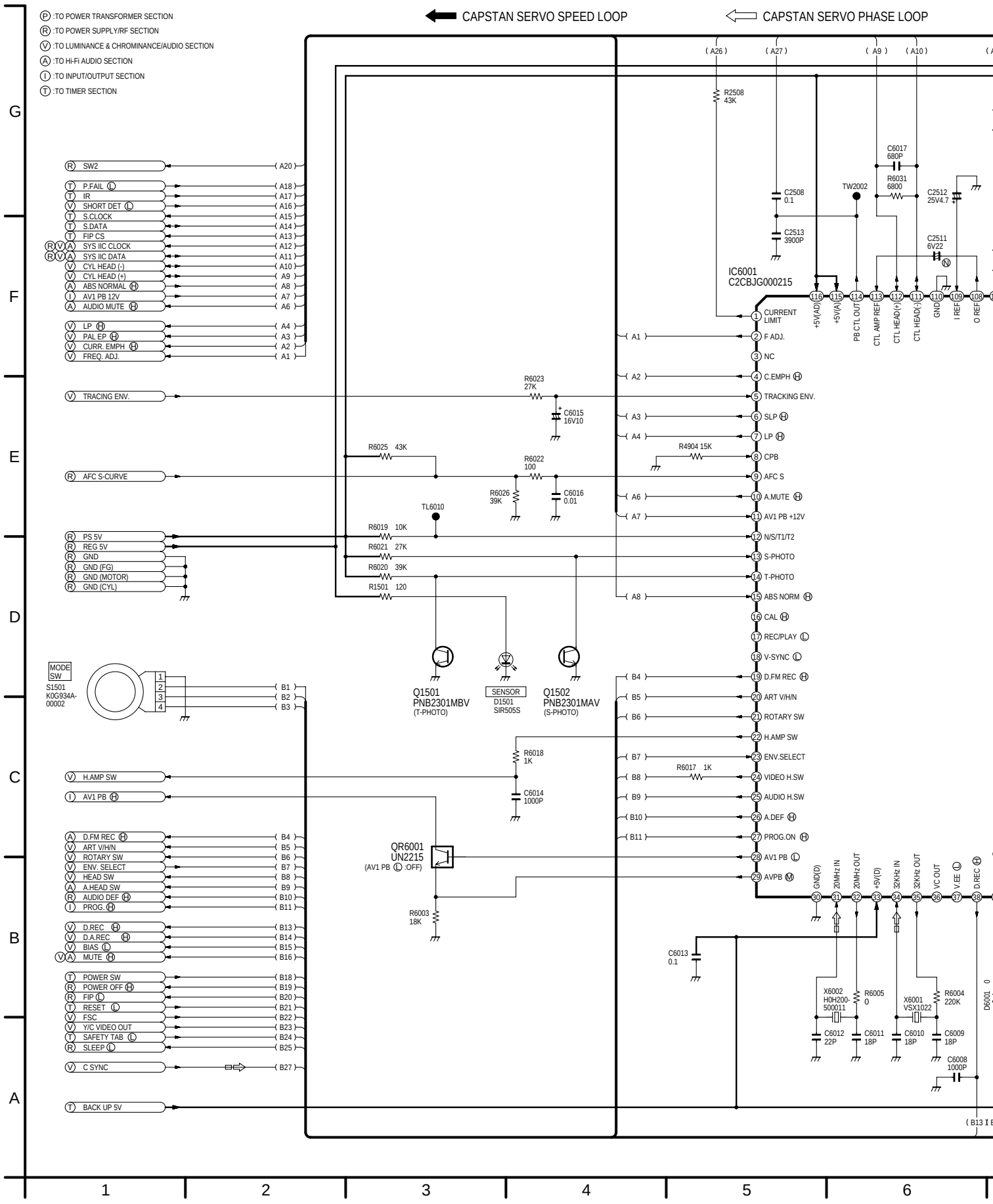


NOTE:DO NOT USE PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

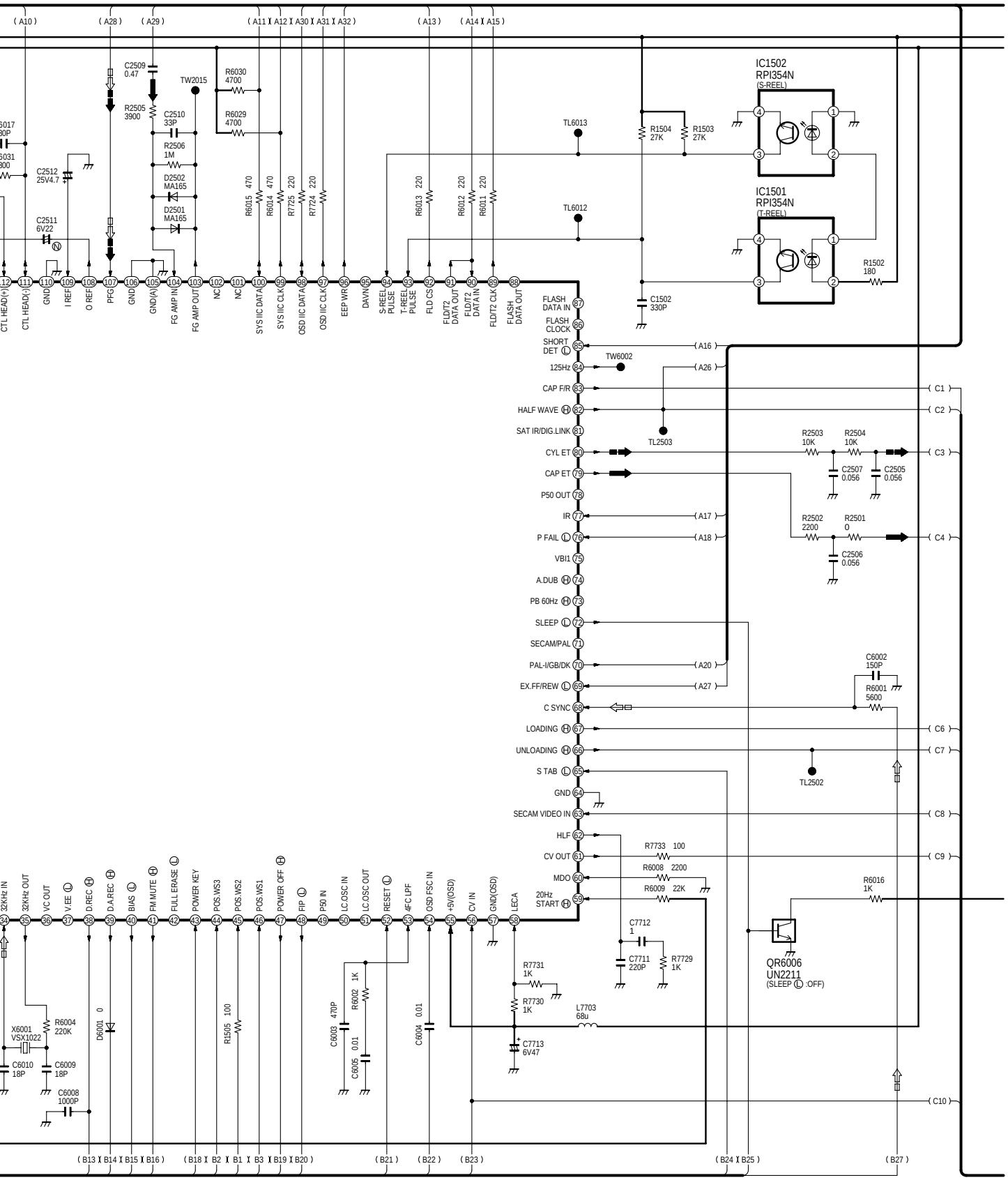
NV-FJ623EG/EGY,FJ628EE
TIMER SECTION SCHEMATIC DIAGRAM

5 6 7 8 9

8.4. SYSTEM CONTROL & SERVO SECTION IN MAIN SCHEMATIC DIAGRAM

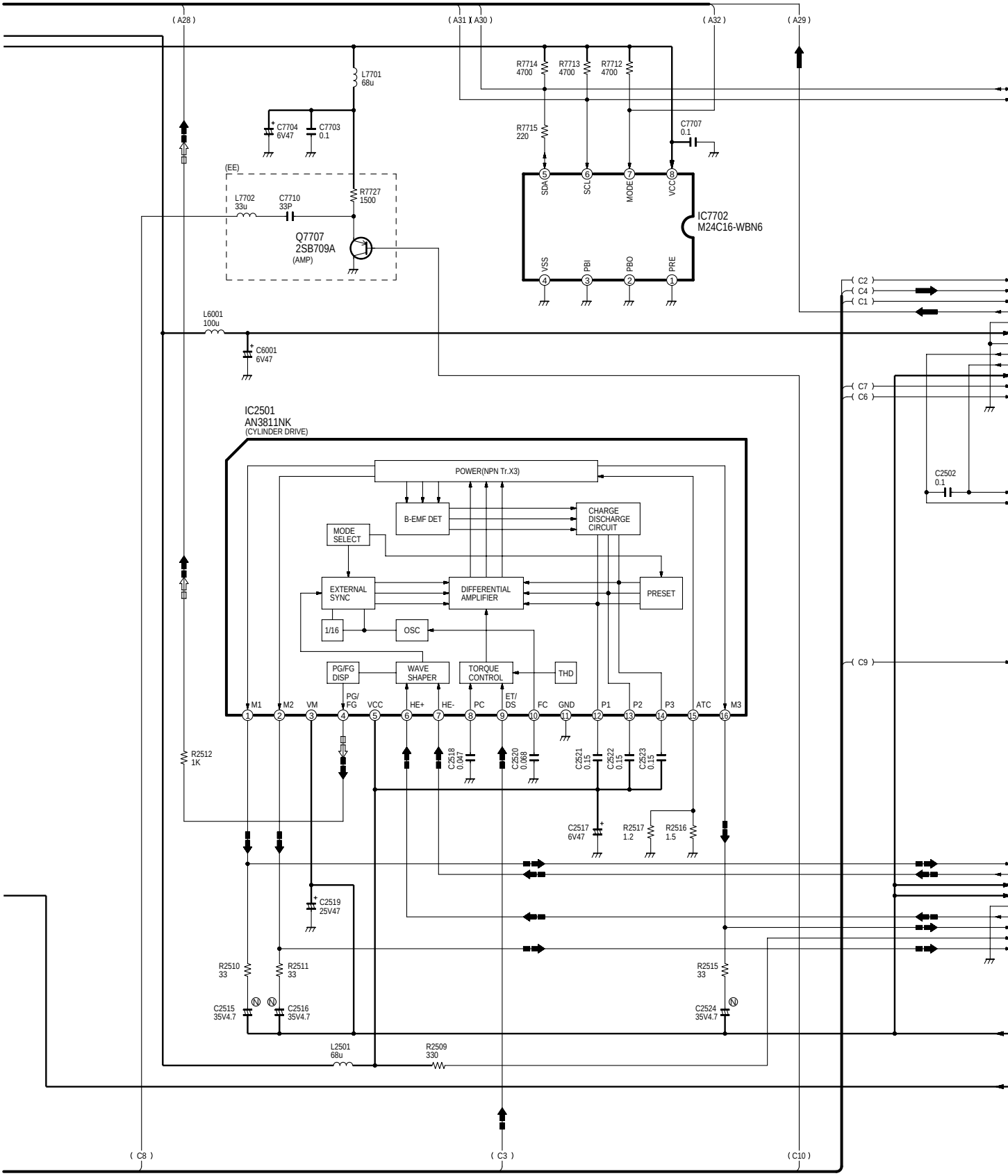


E LOOP CYLINDER SERVO SPEED LOOP CYLINDER SERVO PHASE LOOP



NV-FJ623EG/EGY,FJ628EE
SYSTEM CONTROL & SERVO SECTION SCHEMATIC DIAGRAM

6 | 7 | 8 | 9 | 10 | 11

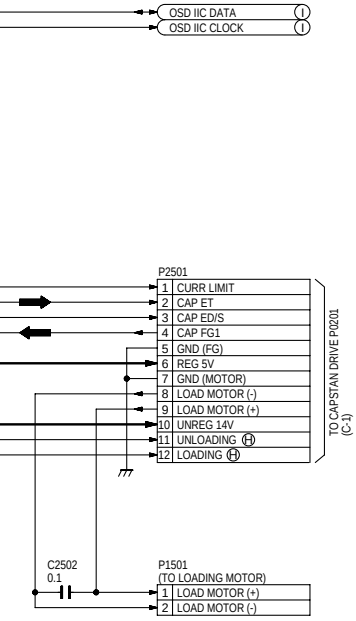


NV-FJ623EG/EGY,FJ628EE

SYSTEM CONTROL & SERVO SECTION SCHEMATIC DIAGRAM

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS
ORDERING.WHEN YOU ORDER A PART,PLEASE RE

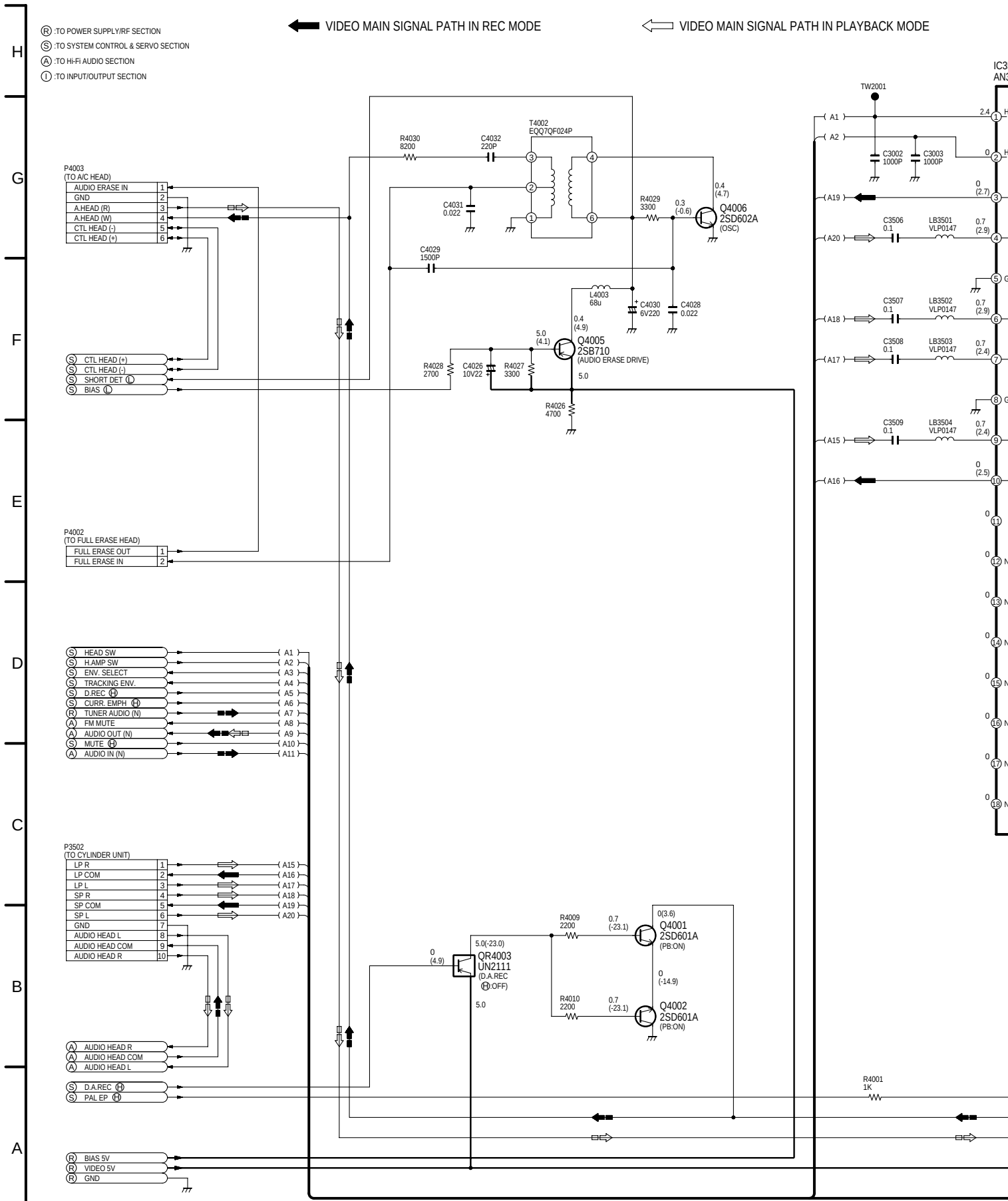
12 | 13 | 14 | 15 | 16 | 17



NV-FJ623EG/EGY,FJ628EE
SYSTEM CONTROL & SERVO
SECTION SCHEMATIC DIAGRAM

IMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR
DER A PART,PLEASE REFER TO PARTS LIST.

8.5. LUMINANCE & CHROMINANCE/ AUDIO SECTION IN MAIN SCHEMATIC DIAGR

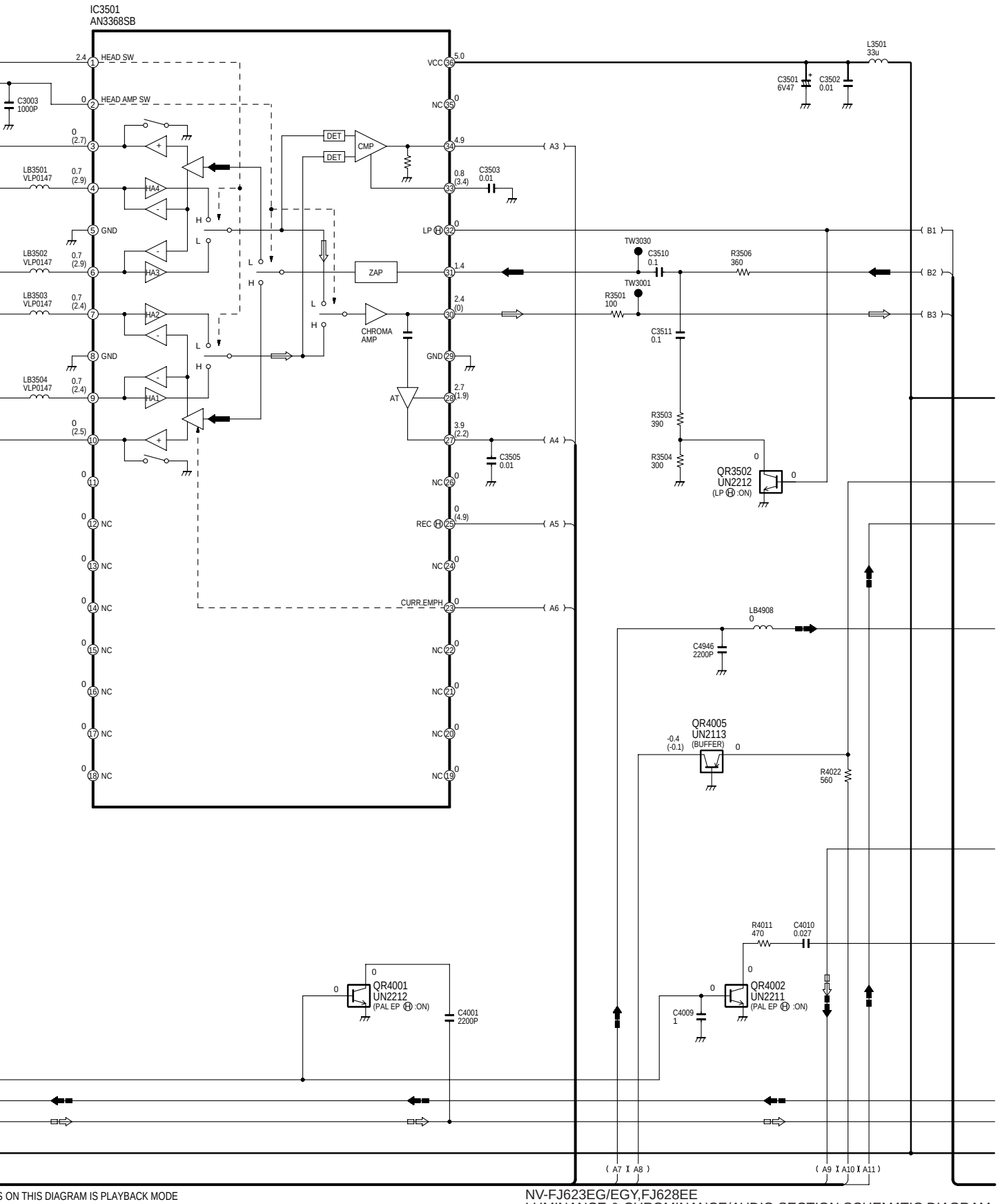


NOTE:THE MEASUREMENT MODE OF THE DC VLOLTAGE IN THE BRACKETS( )ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR SIGNAL.(SP MODE)

THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS P WITH PAL COLOUR SIGNAL.(SP MODE)

C DIAGRAM

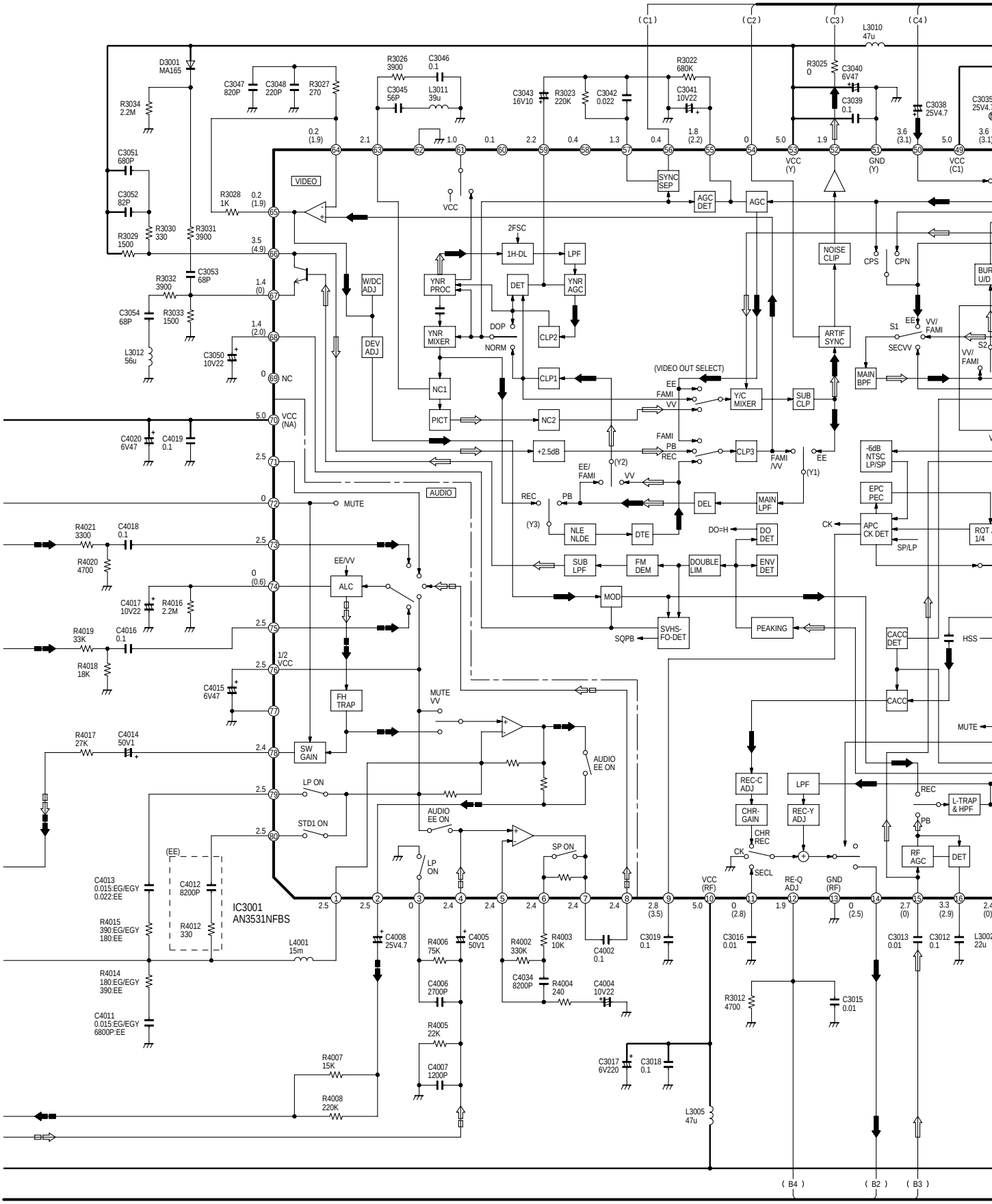
ODE AUDIO MAIN SIGNAL PATH IN REC MODE AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE



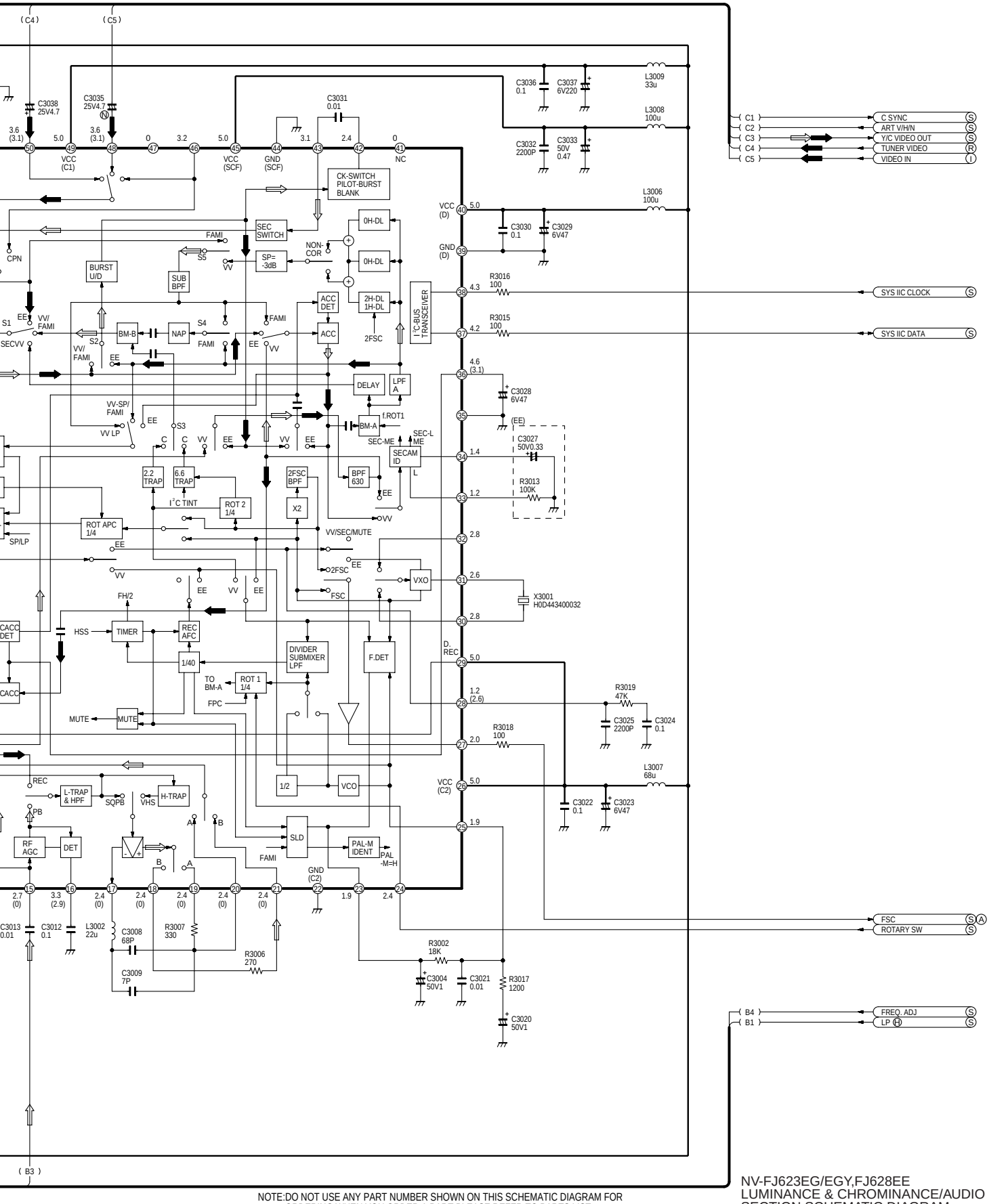
S ON THIS DIAGRAM IS PLAYBACK MODE

NV-FJ623EG/EGY,FJ628EE
LUMINANCE & CHROMINANCE/AUDIO SECTION SCHEMATIC DIAGRAM

6 7 8 9 10 11 12



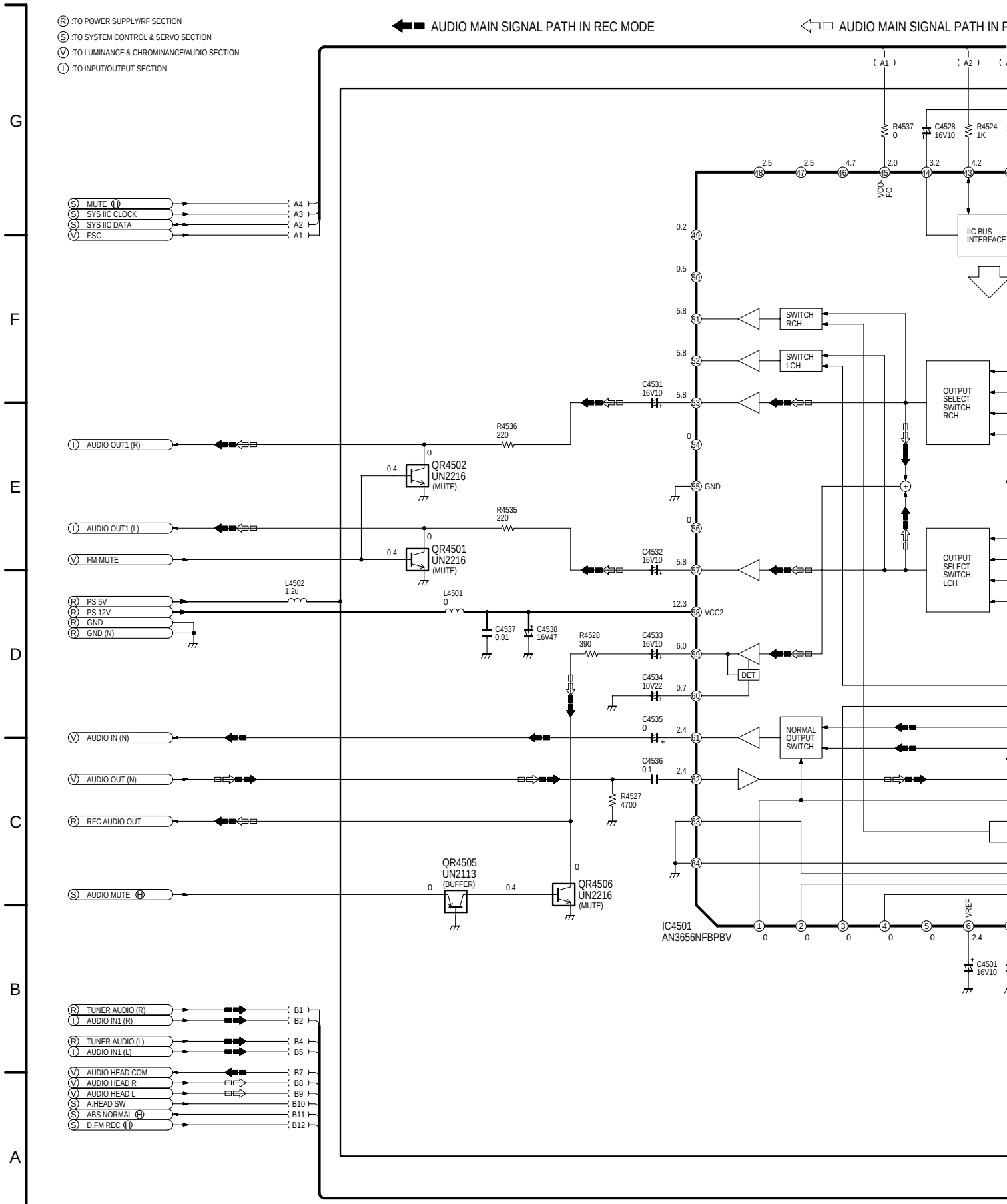
NV-FJ623EG/EGY,FJ628EE
LUMINANCE & CHROMINANCE/AUDIO SECTION SCHEMATIC DIAGRAM



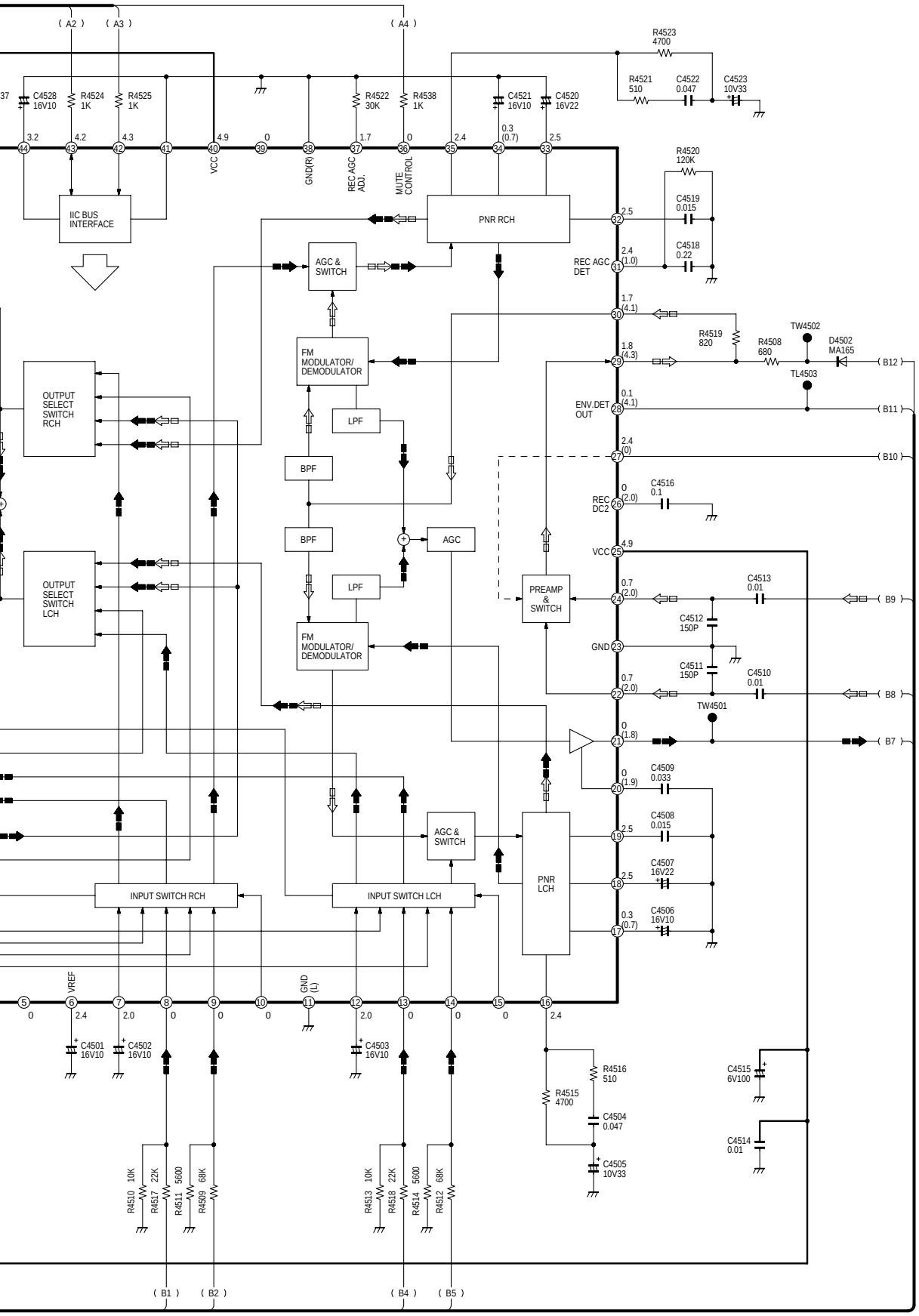
NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-FJ623EG/EGY,FJ628EE
LUMINANCE & CHROMINANCE/AUDIO SECTION SCHEMATIC DIAGRAM

8.6. Hi-Fi AUDIO SECTION IN MAIN SCHEMATIC DIAGRAM



I SIGNAL PATH IN PLAYBACK MODE



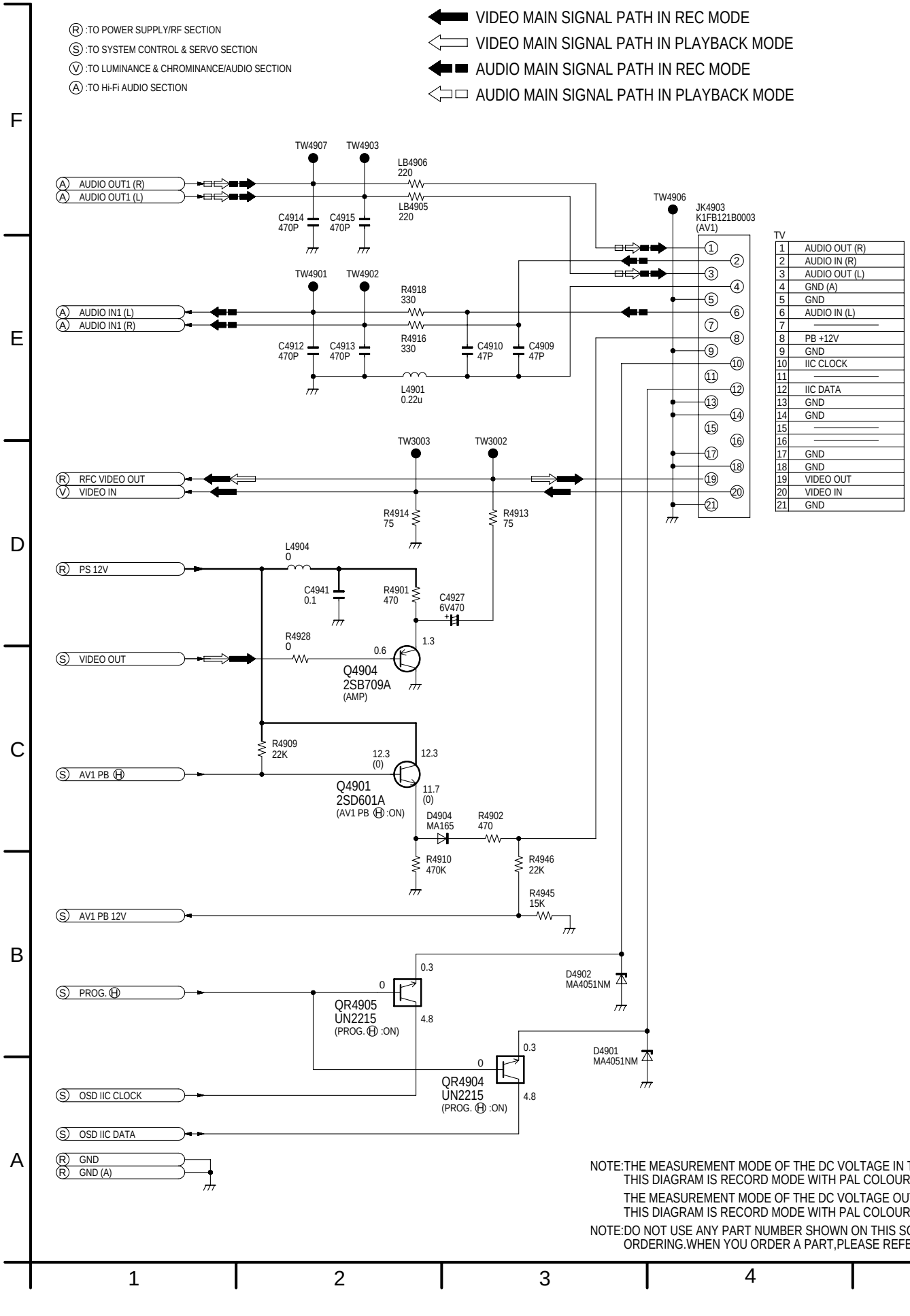
THIS DIAGRAM IS PLAYBACK MODE

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-FJ623EG/EGY,FJ628EE
Hi-Fi AUDIO SECTION SCHEMATIC DIAGRAM

6	7	8	9	10

8.7. INPUT/ OUTPUT SECTION IN MAIN SCHEMATIC DIAGRAM



NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS
THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR.(SP MODE)

THE MEASUREMENT MODE OF THE DC VOLTAGE OUT THE BRACKE
THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR SIGNAL.(SP M

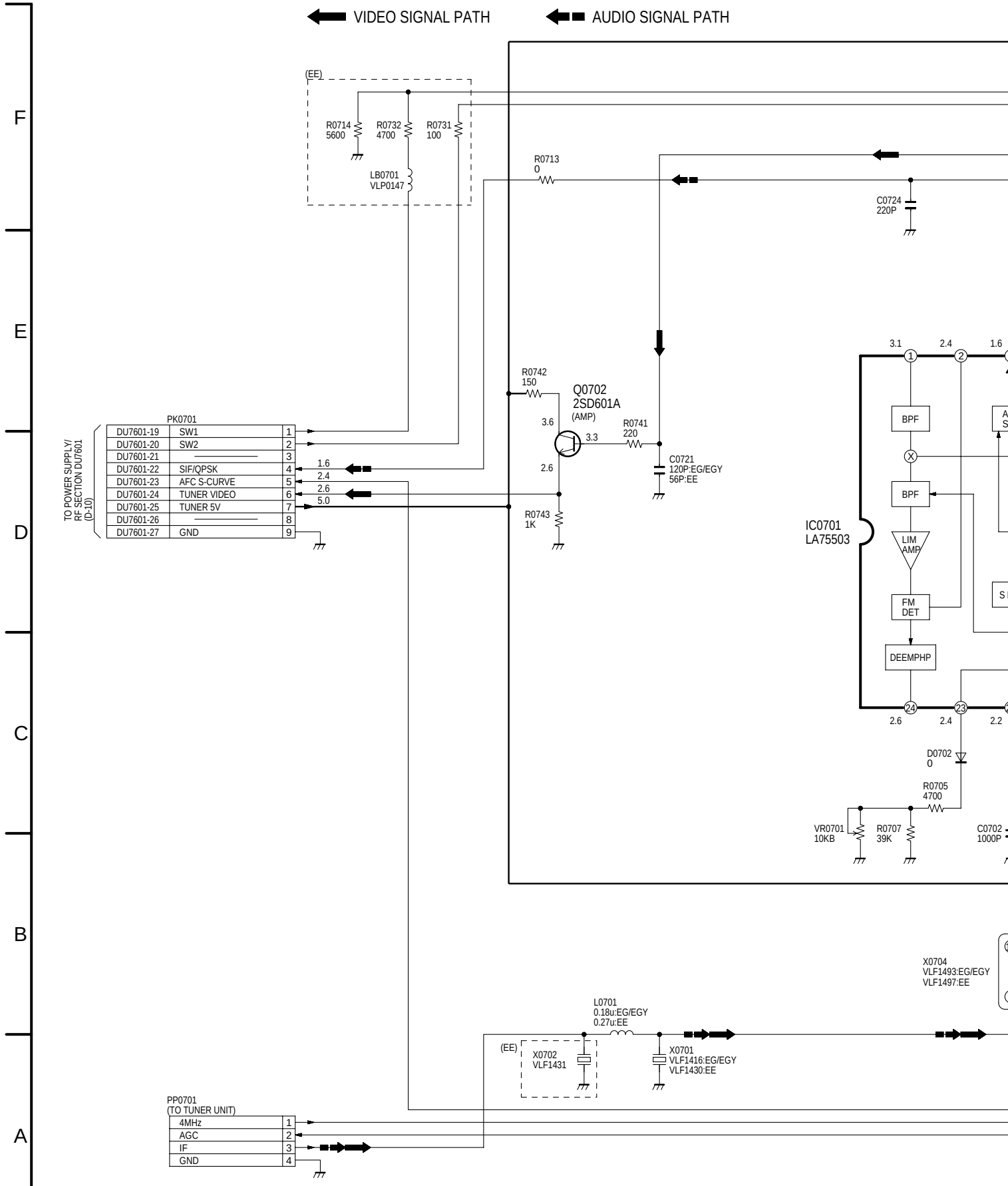
NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIA
ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS L

E IN THE BRACKETS( )ON
LOUR.(SP MODE)
E OUT THE BRACKETS( )ON
LOUR SIGNAL.(SP MODE)
IS SCHEMATIC DIAGRAM FOR
REFER TO PARTS LIST.

NV-FJ623EG/EGY,FJ628EE
INPUT/OUTPUT SECTION
SCHEMATIC DIAGRAM

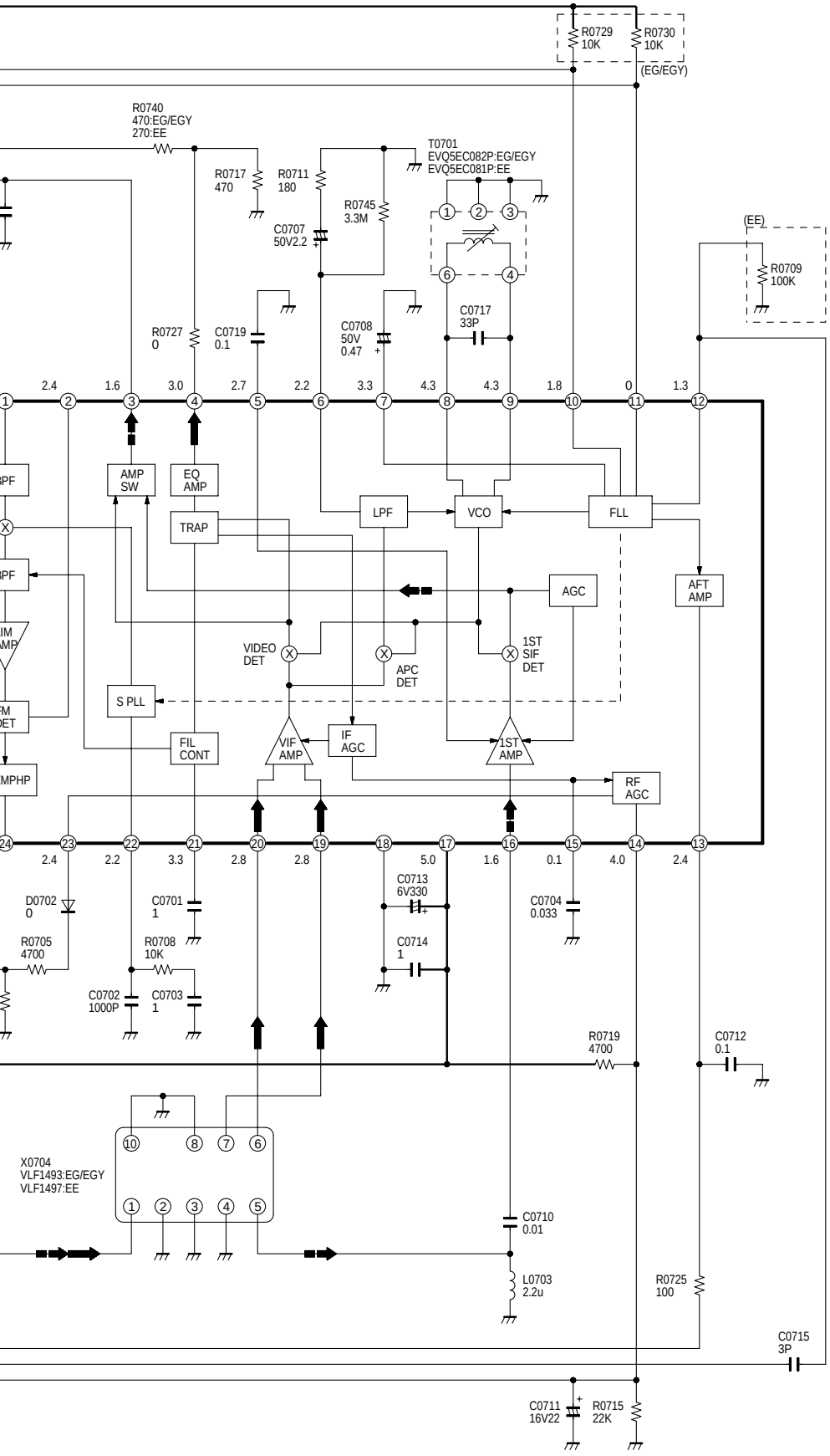
5

8.8. TV DEMODULATOR PACK SCHEMATIC DIAGRAM



NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCH
ORDERING.WHEN YOU ORDER A PART,PLEASE REFER

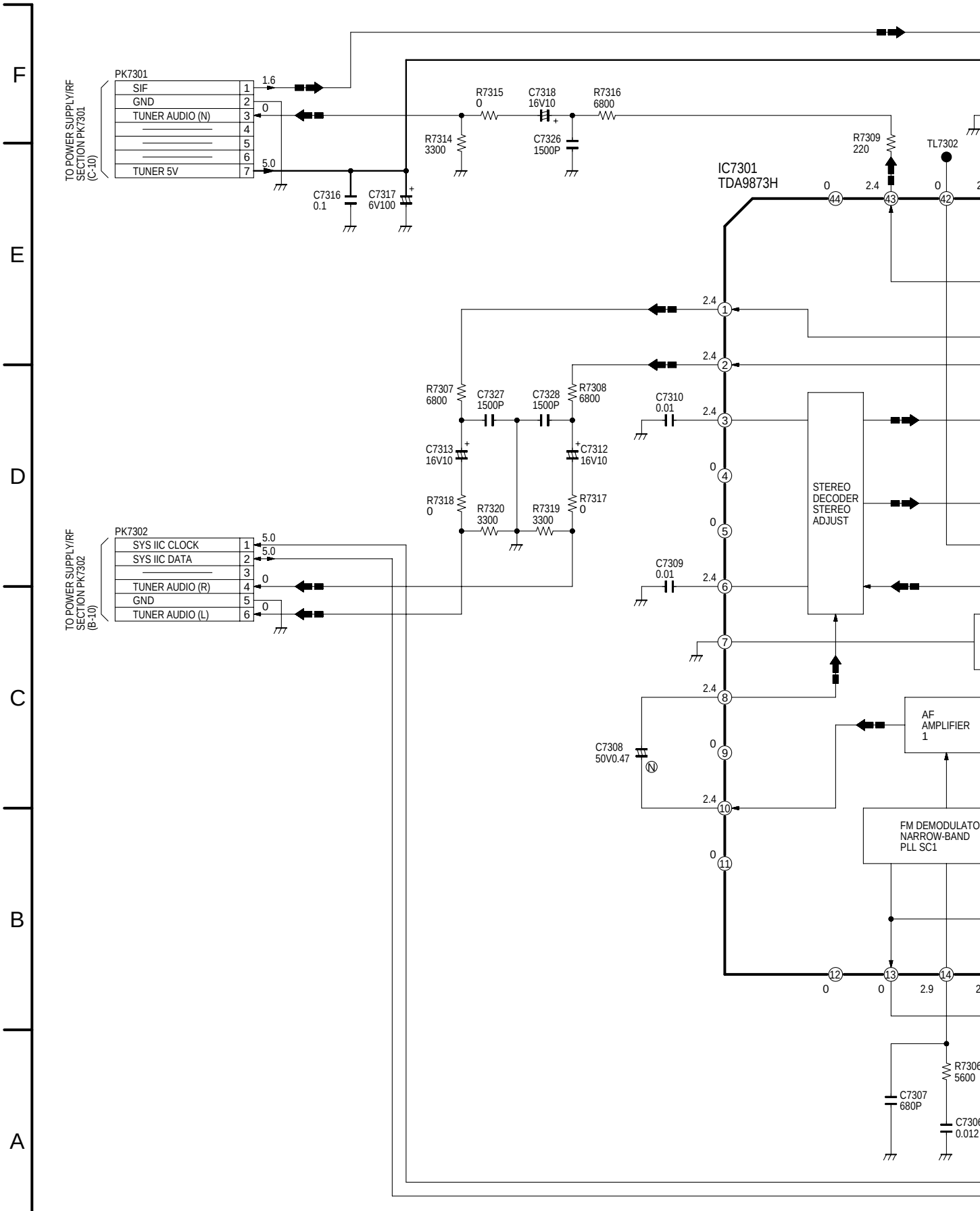


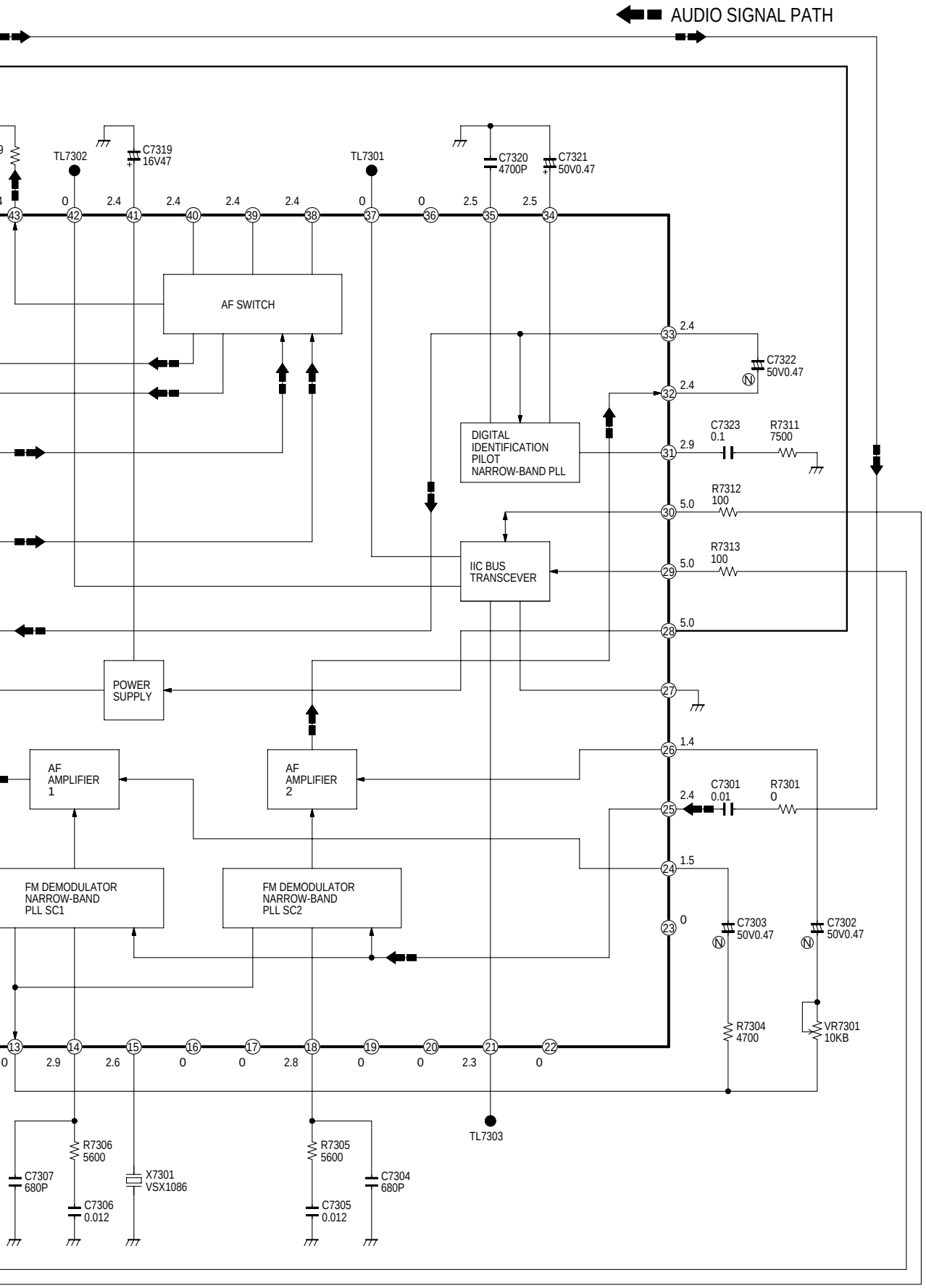
HOWN ON THIS SCHEMATIC DIAGRAM FOR
ART,PLEASE REFER TO PARTS LIST.

NV-FJ623EG/EGY,FJ628EE
TV DEMODULATOR PACK SCHEMATIC DIAGRAM

5	6	7	8

8.9. DECODER PACK SCHEMATIC DIAGRAM (NV-FJ623EG/EGY)



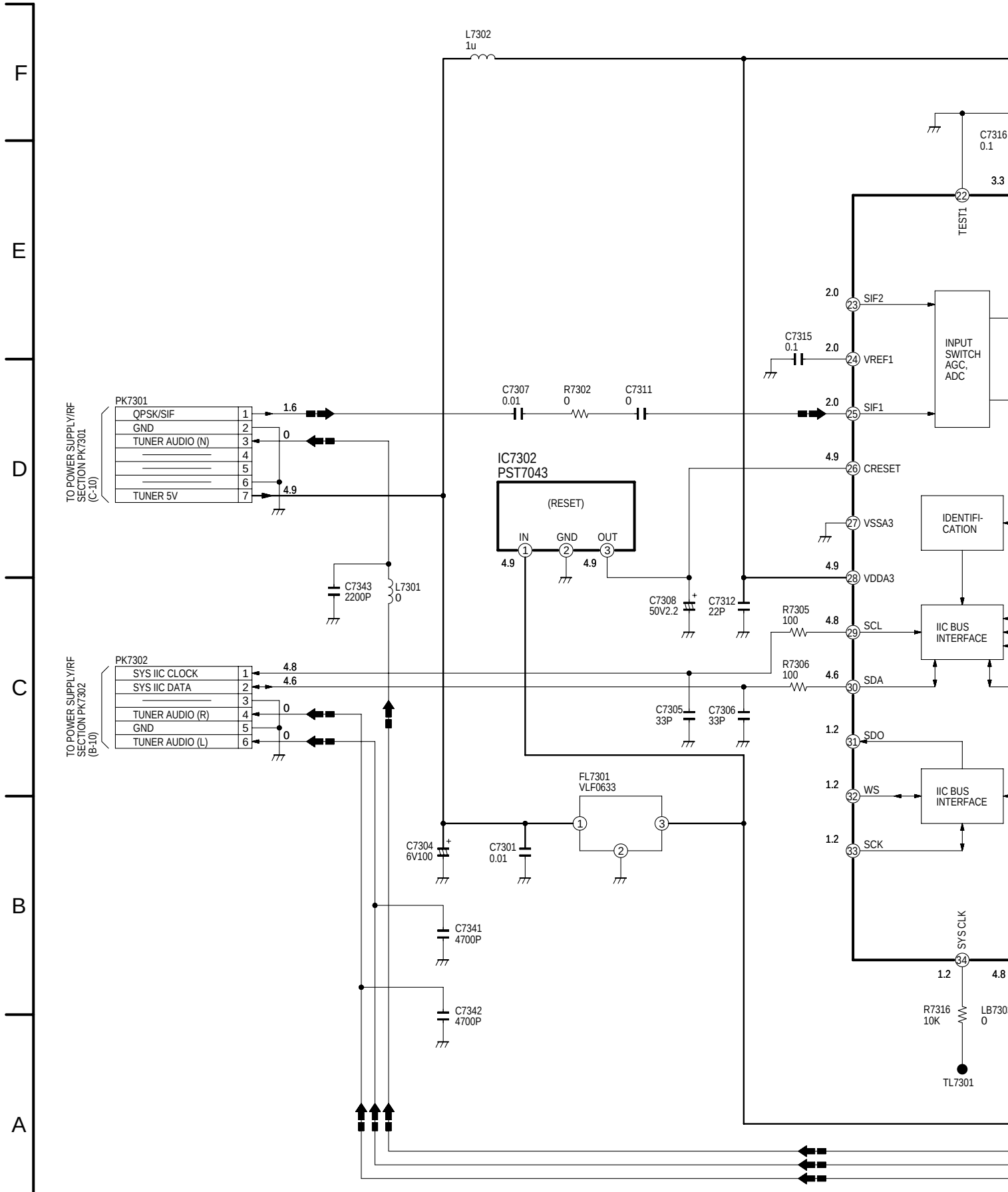


E: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-FJ623EG/EGY
DECODER PACK SCHEMATIC DIAGRAM

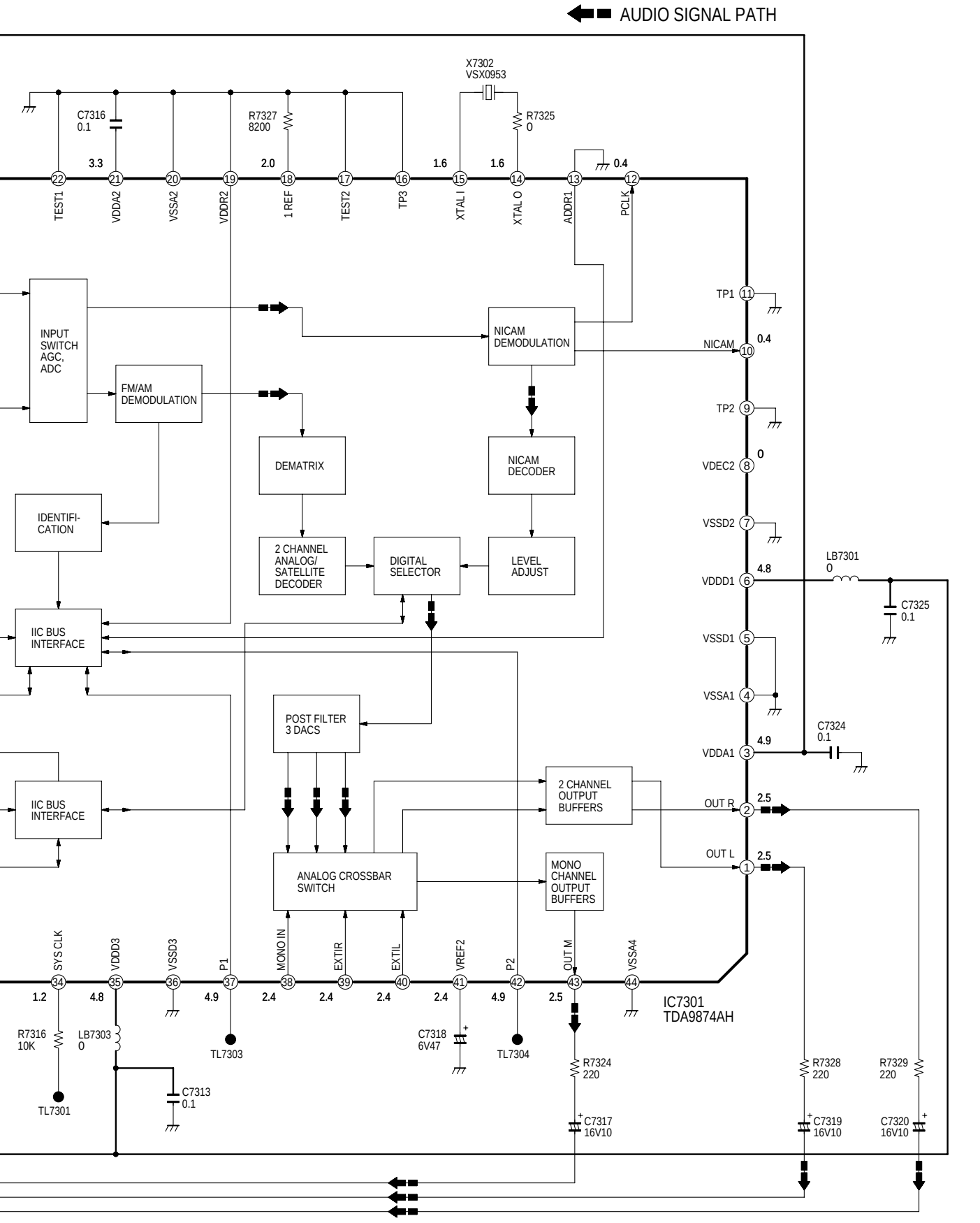
5 | 6 | 7 | 8

8.10. NICAM DECODER PACK SCHEMATIC DIAGRAM (NV-FJ628EE)



NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE: DO NOT USE ANY PART
ORDERING. WHEN YO

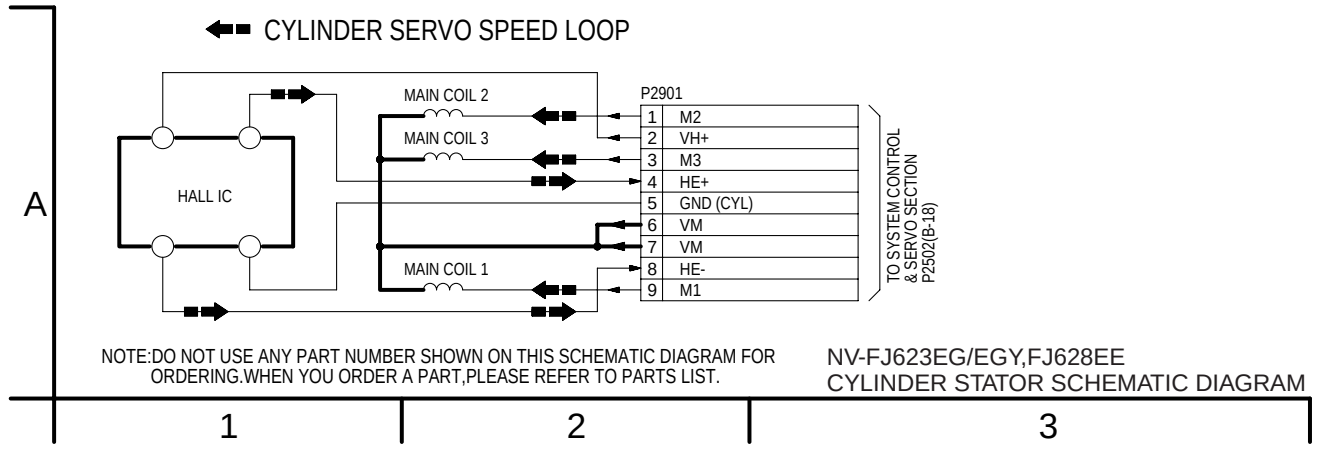


OT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR
RING. WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

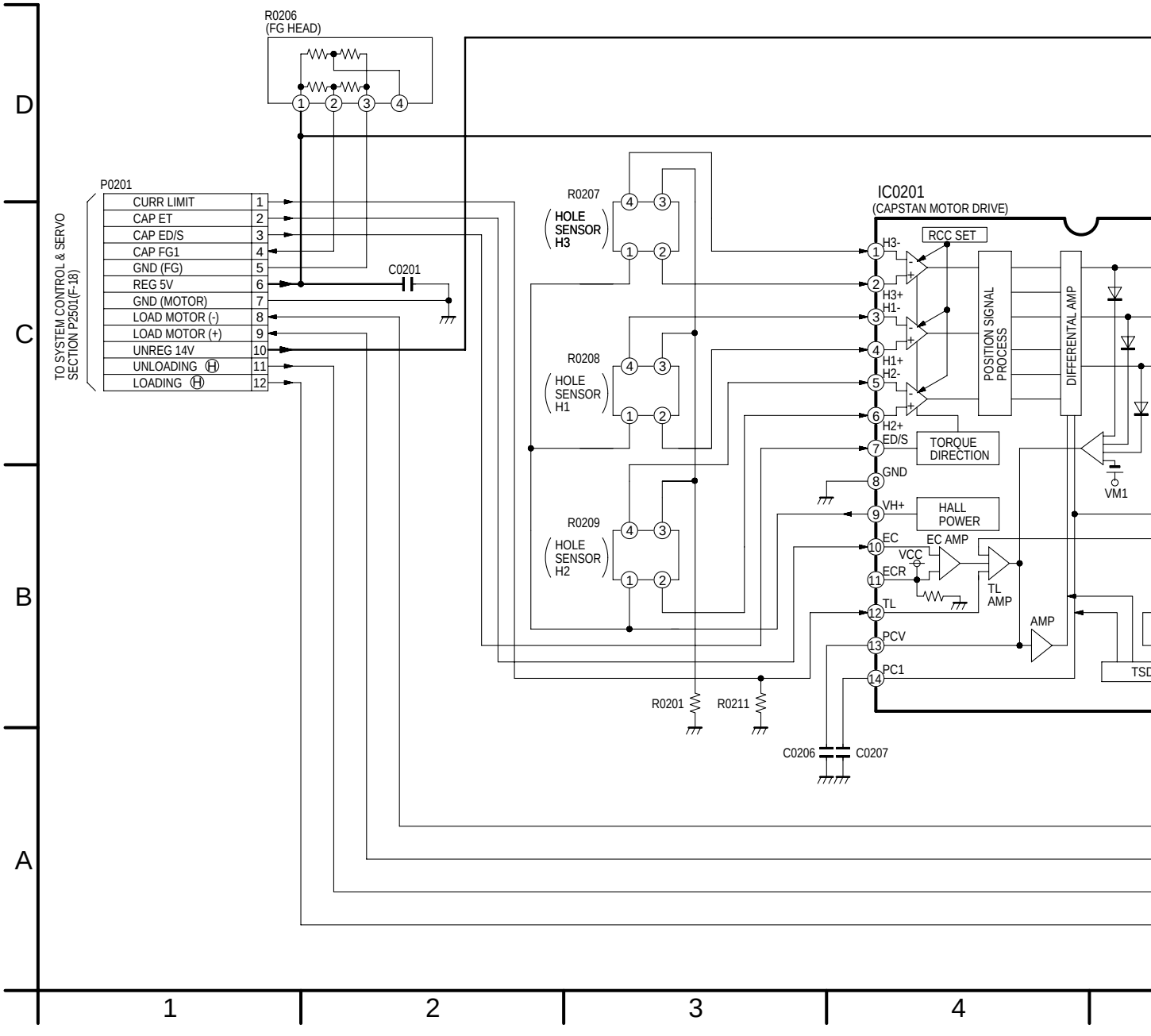
NV-FJ628EE
NICAM DECODER PACK SCHEMATIC DIAGRAM

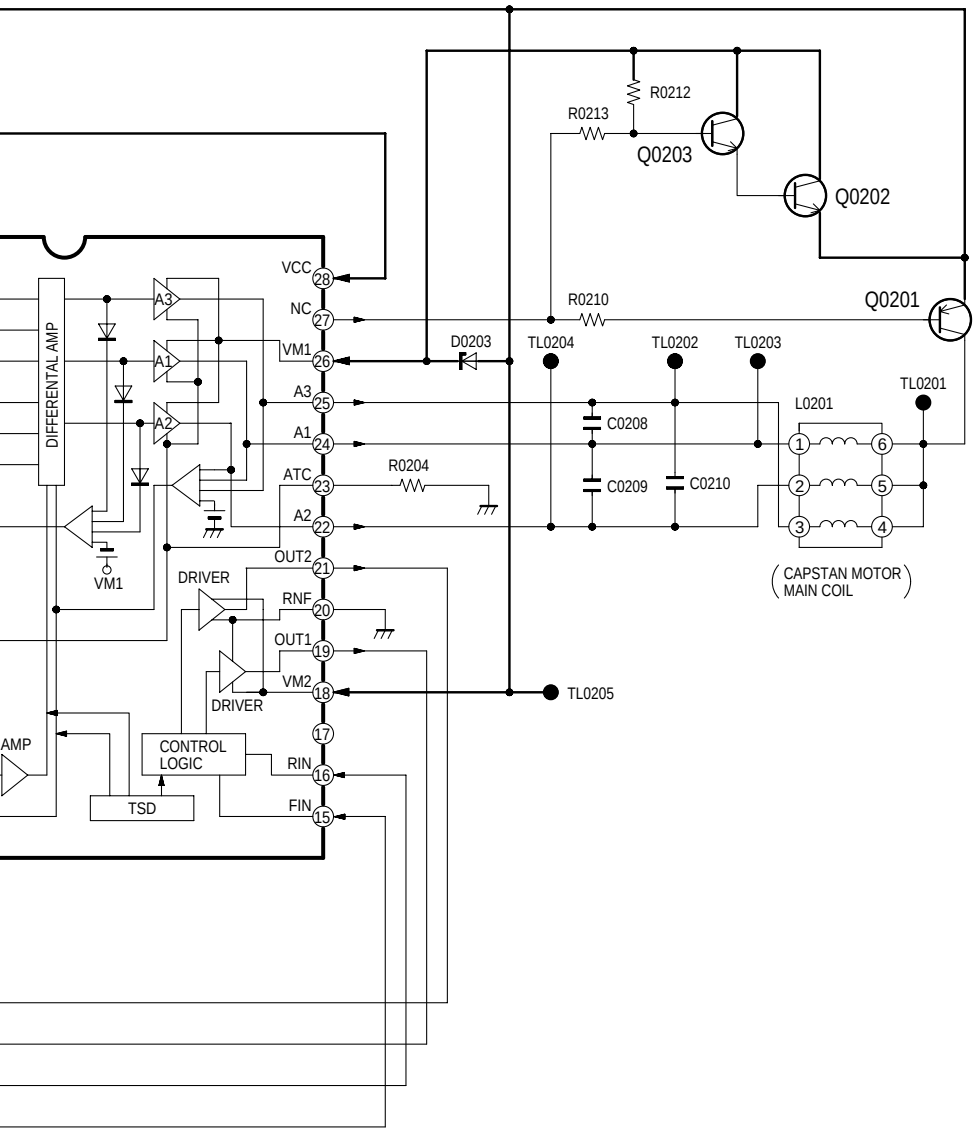
5 | 6 | 7 | 8

8.11. CYLINDER STATOR UNIT SCHEMATIC DIAGRAM



8.12. CAPSTAN UNIT SCHEMATIC DIAGRAM





NV-FJ623EG/EGY,FJ628EE
CAPSTAN UNIT SCHEMATIC DIAGRAM

5 6 7

MAIN SIGNAL PATH IN REC MODE

MAIN SIGNAL PATH IN PLAYBACK MODE

JK4903
(AV1)
TV

① AUDIO OUT (R)
② AUDIO IN (R)
③ AUDIO OUT (L)
⑥ AUDIO IN (L)

TW4907
TW4903
TW4902
TW4901

QR4502 MUTE
QR4501 MUTE
QR4506 MUTE
QR7601 MUTE

53
57
9
14
59
8
13
75

INPUT SELECT SWITCH RCH
INPUT SELECT SWITCH LCH
OUTPUT SELECT SWITCH RCH
OUTPUT SELECT SWITCH LCH
PNR RCH
PNR LCH
NORMAL SELECT SWITCH

AGC & SWITCH
AGC
FM MODULATOR/ DEMODULATOR
LPF
BPF
PREAMP & SWITCH

IIC BUS INTERFACE
42 SYS IIC CLOCK
43 SYS IIC DATA
TO/FROM SYSTEM CONTROL

VCO F0 45 FSC
FROM LUMINANCE & CHROMINANCE

27 AUDIO H.SW
FROM SYSTEM CONTROL

30 D.FM REC Ⓗ
FROM SYSTEM CONTROL

29
24
21
22
P3502 8
P3502 9
P3502 10
L
R
Hi-Fi AUDIO HEAD

TO TUNER
RFC AUDIO OUT

FROM DECODER
TUNER AUDIO (R)
TUNER AUDIO (L)

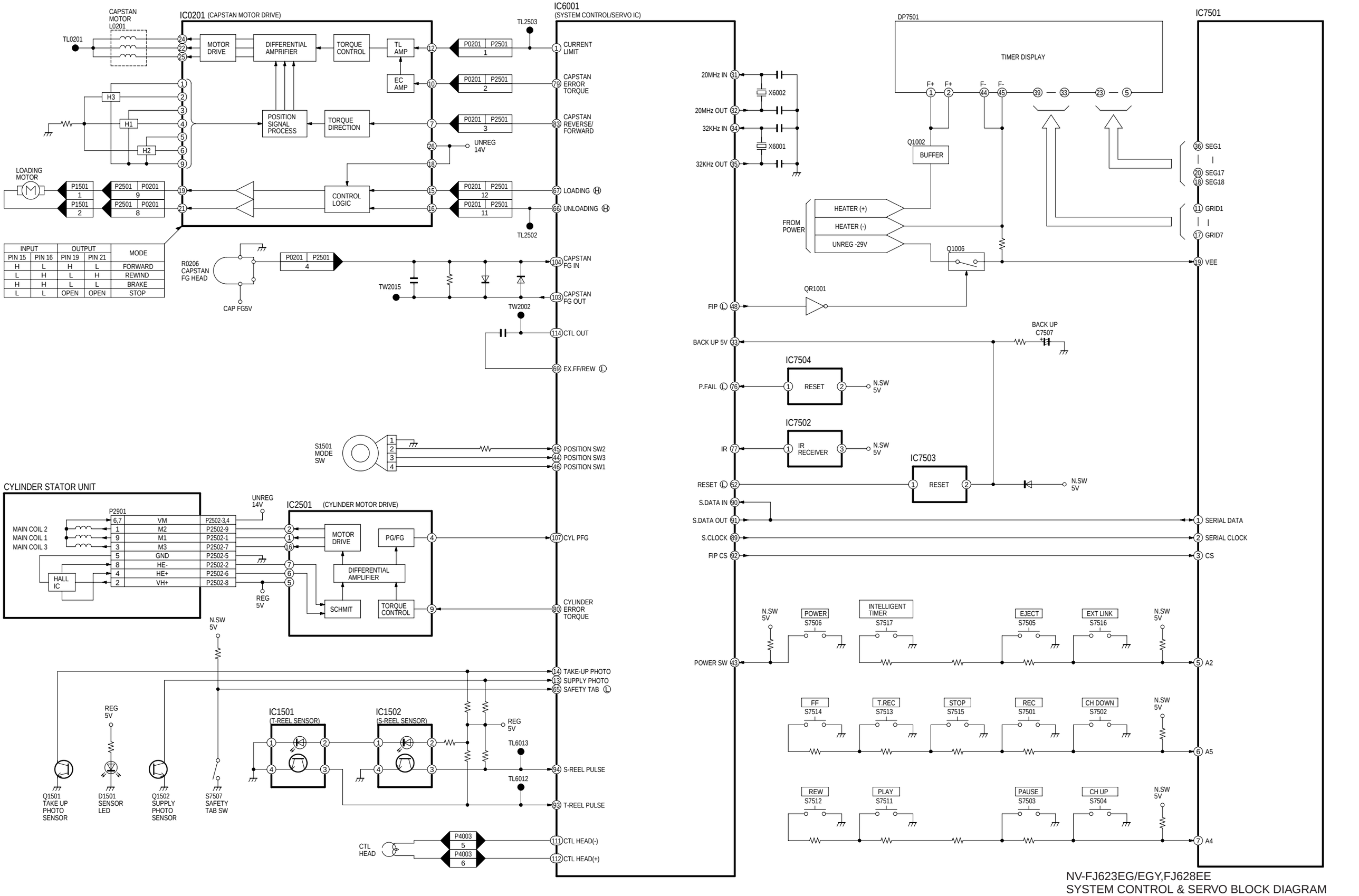
FROM DECODER/ TV DEMODU
TUNER AUDIO (N)

TO/FROM AC HEAD
A.HEAD (W)
A.HEAD (R)

(EE)
(EG/EGY)

IC3001
SW GAIN
ALC
78
62
71
73
61
8
7
2
4

NV-FJ623EG/EGY,FJ628EE
AUDIO BLOCK DIAGRAM



NV-FJ623EG/EGY,FJ628EE
SYSTEM CONTROL & SERVO BLOCK DIAGRAM

MAIN SIGNAL PATH IN REC MODE

MAIN SIGNAL PATH IN PLAYBACK MODE

IC3001

IC3501

TO SYSTEM CONTROL

C SYNC

FROM TV DEMODULATOR

TUNER VIDEO

TO/FROM SYSTEM CONTROL

Y/C VIDEO OUT

ART V/H/IN

JK4903 TV

VIDEO IN

VIDEO OUT

PB +12V

TW3003

TW3002

TO TUNER

RFC VIDEO OUT

Q4904

AMP

VIDEO OUT

SYS IIC CLOCK

SYS IIC DATA

FROM SYSTEM CONTROL

AV PB Ⓗ

Q4901

PS 12V

YNR

HSS

1H DELAY

LPF

DDC

NC1

PICT

NC2

CLP1

NOR

DET

AGC

Y/C

C

FAMI

EE

VV

EE/ FAMI

NLE NLDE

DTE

MAIN LPF

ENV DET

SUB LPF

FM DEM

DOUB LIM

PEAKING

H-TRAP

TW3030

QR3502

LP Ⓗ

Y/C MIX

REC-Y ADJ

LPF

AGC DET

RF AGC

L-TRAP &HPF

W/D CLIP

MAIN EMPH

DEV ADJ

FM MOD

AMP

ART SYNC

SUB CLAMP

Y

VV/FAMI

COLOUR KILLER SW

BURST UP/DOWN

630KHz BPF

CACC

REC-C ADJ

BPF (FAMI)3.58M (PAL-PB)2.2M (NTSC-PB) 1.79M

BPF 3.58M/ 4.43M

VV/ FAMI

FAMI/VV

BM-B (PB)2.2/1.79M→4.43/3.58M (FAMI)2.2M→4.43M

NTSC ALTERNATION

LPF

2HDL 1HDL

0HDL

0HDL

BM-A (REC)4.43/3.58M (PB)630K→2.2/1.79M (FAMI)3.58M→2.2M

ACC

ACC DET

IIC BUS TRANSCEIVER

FAMI/ VV SP

EE VV LP

PHASE ROTATION

X2

2fsc

fsc

VXO

VCO

1/2

1/4

1/4

SUB BM

F.DET

1/40

APC CK DET

AFC

SIDE LOCK

PB Q ADJ

X3001

AMP & H.AMP SW

PREAMP & H.SW

H.AMP SW

PREAMP & H.SW

LP L

LP COM

LP R

SP L

SP COM

SP R

P3502 3

P3502 2

P3502 1

P3502 6

P3502 5

P3502 4

TO/FROM CYLINDER VIDEO HEAD

HEAD SW

H.AMP SW

CURR.EMPH Ⓗ

D.REC Ⓗ

LP Ⓗ

TRACKING ENV.

ENV.SELECT

TO/FROM SYSTEM CONTROL

FSC

TO SYSTEM CONTROL/ Hi-Fi AUDIO

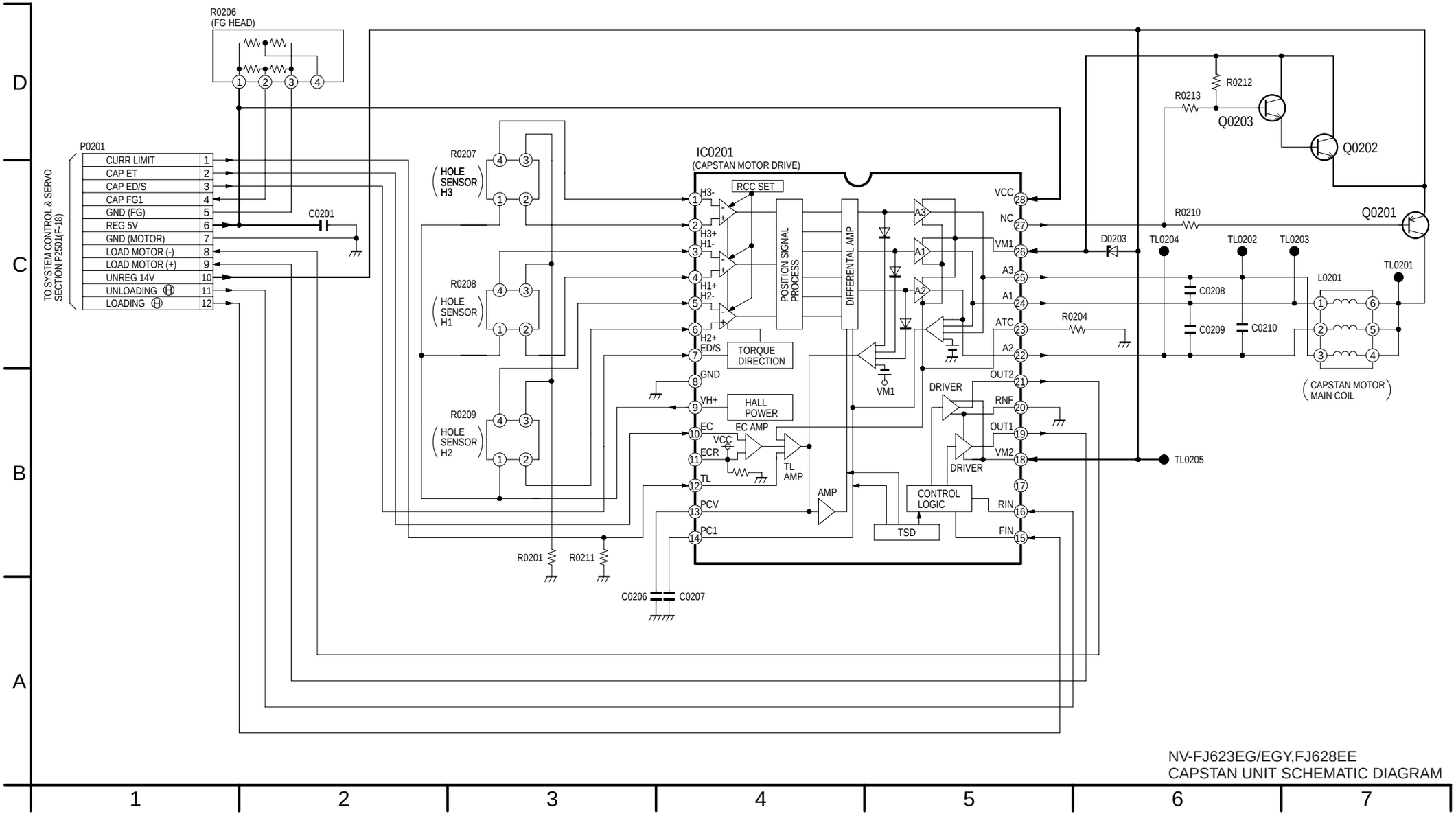
ROTARY SW

F. ADJ

FROM SYSTEM CONTROL

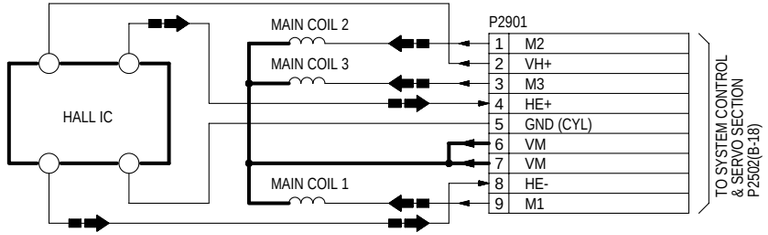
FAMI MODE:When setting the NTSC CONVERTER to ON on the OSD Screen Display, the signals from NTSC Signal Source (ex.NTSC GAME Machine)connected to the VCR can be appeared on the PAL TV.However when recording, it is not recorded correctly.

NV-FJ623EG/EGY,FJ628EE
LUMINANCE & CHROMINANCE
BLOCK DIAGRAM



NV-FJ623EG/EGY,FJ628EE
CAPSTAN UNIT SCHEMATIC DIAGRAM

CYLINDER SERVO SPEED LOOP



NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-FJ623EG/EGY,FJ628EE
CYLINDER STATOR SCHEMATIC DIAGRAM

A

1 2 3

AUDIO SIGNAL PATH

PK7301
SIF 1
GND 2
TUNER AUDIO (N) 3
4
5
6
TUNER 5V 7
TO POWER SUPPLY/RF SECTION PK7301 (C-10)

PK7302
SYS IIC CLOCK 1
SYS IIC DATA 2
3
TUNER AUDIO (R) 4
GND 5
TUNER AUDIO (L) 6
TO POWER SUPPLY/RF SECTION PK7302 (B-10)

IC7301
TDA9873H

AF SWITCH
STEREO DECODER STEREO ADJUST
DIGITAL IDENTIFICATION PILOT NARROW-BAND PLL
IIC BUS TRANSCEVER
POWER SUPPLY
AF AMPLIFIER 1
AF AMPLIFIER 2
FM DEMODULATOR NARROW-BAND PLL SC1
FM DEMODULATOR NARROW-BAND PLL SC2

R7314 3300
R7315 0
C7318 16V10
R7316 6800
C7326 1500P
C7316 0.1
C7317 6V100
R7309 220
TL7302
C7319 16V47
TL7301
C7320 4700P
C7321 50V0.47
C7322 50V0.47 (N)
R7307 6800
C7327 1500P
C7328 1500P
R7308 6800
C7313 16V10
C7312 16V10
R7318 0
R7320 3300
R7319 3300
R7317 0
C7310 0.01
C7309 0.01
C7323 0.1
R7311 7500
R7312 100
R7313 100
C7308 50V0.47 (N)
C7301 0.01
R7301 0
C7303 50V0.47 (N)
C7302 50V0.47 (N)
R7304 4700
VR7301 10KB
TL7303
R7306 5600
C7307 680P
C7306 0.012
X7301 VSX1086
R7305 5600
C7304 680P
C7305 0.012

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-FJ623EG/EGY
DECODER PACK SCHEMATIC DIAGRAM

Ⓡ :TO POWER SUPPLY/RF SECTION
Ⓢ :TO SYSTEM CONTROL & SERVO SECTION
Ⓥ :TO LUMINANCE & CHROMINANCE/AUDIO SECTION
Ⓘ :TO INPUT/OUTPUT SECTION

AUDIO MAIN SIGNAL PATH IN REC MODE

AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE

Ⓢ MUTE Ⓗ (A4)
Ⓢ SYS IIC CLOCK (A3)
Ⓢ SYS IIC DATA (A2)
Ⓥ FSC (A1)

IIC BUS INTERFACE
SWITCH RCH
SWITCH LCH
OUTPUT SELECT SWITCH RCH
OUTPUT SELECT SWITCH LCH
NORMAL OUTPUT SWITCH
DET
INPUT SWITCH RCH
INPUT SWITCH LCH
PNR RCH
PNR LCH
AGC & SWITCH
FM MODULATOR/ DEMODULATOR
LPF
BPF
AGC
PREAMP & SWITCH
REC AGC DET
REC DC2
ENV.DET OUT
VCO-FO
VCC
GND(R)
REC AGC ADJ.
MUTE CONTROL
VREF
GND (L)

R4537 0
C4528 16V10
R4524 1K
R4525 1K
R4523 4700
R4521 510
C4522 0.047
C4523 10V33
R4522 30K
R4538 1K
C4521 16V10
C4520 16V22
R4520 120K
C4519 0.015
C4518 0.22
R4519 820
R4508 680
D4502 MA165
TW4502
TL4503
C4516 0.1
C4513 0.01
C4512 150P
C4511 150P
C4510 0.01
TW4501
C4509 0.033
C4508 0.015
C4507 16V22
C4506 16V10
C4531 16V10
C4532 16V10
C4533 16V10
C4534 10V22
C4535 0
C4536 0.1
R4536 220
R4535 220
R4528 390
R4527 4700
C4537 0.01
C4538 16V47
L4502 1.2u
L4501 0
C4501 16V10
C4502 16V10
C4503 16V10
R4510 10K
R4517 22K
R4511 5600
R4509 68K
R4513 10K
R4518 22K
R4514 5600
R4512 68K
R4516 510
C4504 0.047
C4505 10V33
R4515 4700
C4515 6V100
C4514 0.01

Ⓘ AUDIO OUT1 (R)
Ⓘ AUDIO OUT1 (L)
Ⓥ FM MUTE
QR4502 UN2216 (MUTE)
QR4501 UN2216 (MUTE)

Ⓡ PS 5V
Ⓡ PS 12V
Ⓡ GND
Ⓡ GND (N)

Ⓥ AUDIO IN (N)
Ⓥ AUDIO OUT (N)
Ⓡ RFC AUDIO OUT
Ⓢ AUDIO MUTE Ⓗ
QR4505 UN2113 (BUFFER)
QR4506 UN2216 (MUTE)

IC4501 AN3656NFBPBV

Ⓡ TUNER AUDIO (R) (B1)
Ⓘ AUDIO IN1 (R) (B2)
Ⓡ TUNER AUDIO (L) (B4)
Ⓘ AUDIO IN1 (L) (B5)
Ⓥ AUDIO HEAD COM (B7)
Ⓥ AUDIO HEAD R (B8)
Ⓥ AUDIO HEAD L (B9)
Ⓢ A.HEAD SW (B10)
Ⓢ ABS NORMAL Ⓗ (B11)
Ⓢ D.FM REC Ⓗ (B12)

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS( )ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR SIGNAL.(SP MODE)

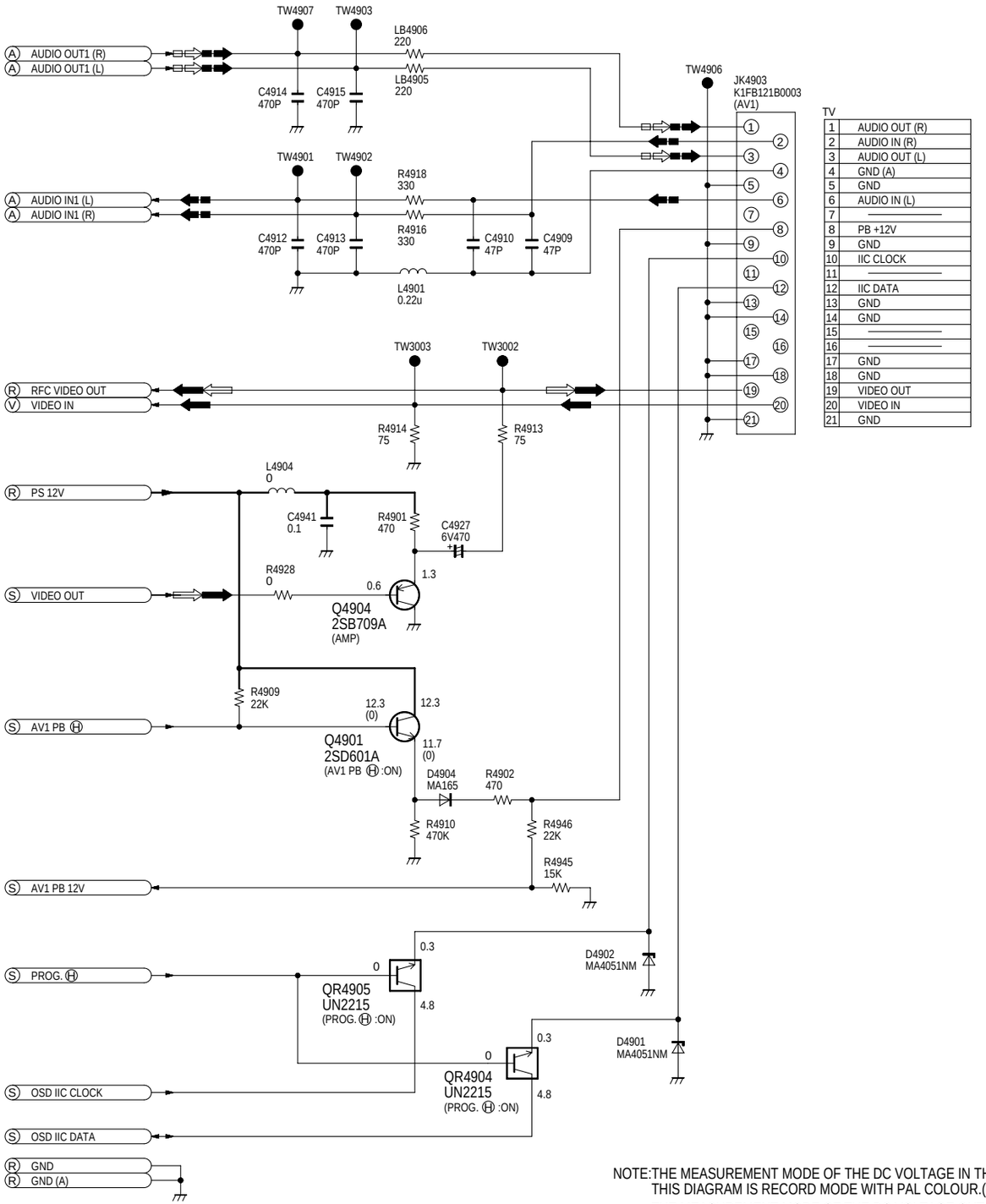
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL.(SP MODE)

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-FJ623EG/EGY,FJ628EE
Hi-Fi AUDIO SECTION SCHEMATIC DIAGRAM

Ⓡ :TO POWER SUPPLY/RF SECTION
Ⓢ :TO SYSTEM CONTROL & SERVO SECTION
Ⓥ :TO LUMINANCE & CHROMINANCE/AUDIO SECTION
Ⓐ :TO Hi-Fi AUDIO SECTION

VIDEO MAIN SIGNAL PATH IN REC MODE
VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE
AUDIO MAIN SIGNAL PATH IN REC MODE
AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE



TV

1	AUDIO OUT (R)
2	AUDIO IN (R)
3	AUDIO OUT (L)
4	GND (A)
5	GND
6	AUDIO IN (L)
7	———
8	PB +12V
9	GND
10	IIC CLOCK
11	———
12	IIC DATA
13	GND
14	GND
15	———
16	———
17	GND
18	GND
19	VIDEO OUT
20	VIDEO IN
21	GND

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS( )ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR.(SP MODE)

THE MEASUREMENT MODE OF THE DC VOLTAGE OUT THE BRACKETS( )ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR SIGNAL.(SP MODE)

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-FJ623EG/EGY,FJ628EE
INPUT/OUTPUT SECTION
SCHEMATIC DIAGRAM

AUDIO SIGNAL PATH

L7302
1u

X7302
VSX0953

C7316
0.1

R7327
8200

R7325
0

TEST1 (22) 3.3
VDDA2 (21)
VSSA2 (20)
VDDR2 (19) 2.0
1 REF (18)
TEST2 (17)
TP3 (16) 1.6
XTAL I (15) 1.6
XTAL O (14)
ADDR1 (13) 0.4
PCLK (12)

SIF2 (23) 2.0
C7315 0.1
VREF1 (24) 2.0
SIF1 (25) 2.0
CRESET (26) 4.9
VSSA3 (27)
VDDA3 (28) 4.9
SCL (29) 4.8
SDA (30) 4.6
SDO (31) 1.2
WS (32) 1.2
SCK (33) 1.2

INPUT SWITCH AGC, ADC
FM/AM DEMODULATION
IDENTIFI-CATION
IIC BUS INTERFACE
IIC BUS INTERFACE

NICAM DEMODULATION
DEMATRIX
NICAM DECODER
2 CHANNEL ANALOG/ SATELLITE DECODER
DIGITAL SELECTOR
LEVEL ADJUST
POST FILTER 3 DACS
2 CHANNEL OUTPUT BUFFERS
ANALOG CROSSBAR SWITCH
MONO CHANNEL OUTPUT BUFFERS

TP1 (11)
NICAM (10) 0.4
TP2 (9)
VDEC2 (8) 0
VSSD2 (7)
VDDD1 (6) 4.8
VSSD1 (5)
VSSA1 (4)
VDDA1 (3) 4.9
OUT R (2) 2.5
OUT L (1) 2.5

SYS CLK (34) 1.2
VDDD3 (35) 4.8
VSSD3 (36)
P1 (37) 4.9
MONO IN (38) 2.4
EXTIR (39) 2.4
EXTIL (40) 2.4
VREF2 (41) 2.4
P2 (42) 4.9
OUT M (43) 2.5
VSSA4 (44)

IC7301
TDA9874AH

PK7301
QPSK/SIF 1
GND 2
TUNER AUDIO (N) 3
4
5
6
TUNER 5V 7
TO POWER SUPPLY/RF SECTION PK7301 (C-10)

C7307 0.01
R7302 0
C7311 0

IC7302
PST7043
(RESET)
IN (1) 4.9
GND (2)
OUT (3) 4.9

C7343 2200P
L7301 0
C7308 50V2.2
C7312 22P
R7305 100
R7306 100
C7305 33P
C7306 33P

PK7302
SYS IIC CLOCK 1 4.8
SYS IIC DATA 2 4.6
3
TUNER AUDIO (R) 4 0
GND 5
TUNER AUDIO (L) 6 0
TO POWER SUPPLY/RF SECTION PK7302 (B-10)

FL7301
VLF0633

C7304 6V100
C7301 0.01

C7341 4700P
C7342 4700P

R7316 10K
LB7303 0
C7313 0.1
TL7301
TL7303
C7318 6V47
TL7304

R7324 220
C7317 16V10
R7328 220
C7319 16V10
R7329 220
C7320 16V10

LB7301
0
C7325 0.1
C7324 0.1

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-FJ628EE
NICAM DECODER PACK SCHEMATIC DIAGRAM

CAUTION

THE STRIPED FRAME INDICATES THE PRIMARY CIRCUIT TO DISTINGUISH THE PRIMARY FROM THE SECONDARY CIRCUIT.
PAY ATTENTION NOT TO RECEIVE AN ELECTRIC SHOCK DURING REPAIR AND SERVICE OF THE PRODUCTS.

HOT

Ⓡ :TO POWER SUPPLY/RF SECTION
Ⓢ :TO SYSTEM CONTROL & SERVO SECTION
Ⓣ :TO TIMER SECTION

P1102 VJS4121
AC INLET
F1101 VSF0243C16
D1101 ERZVA5Z471
L1101 ELF15N005A
LB1102 J0JHC0000070
C1101 0.068
C1102 1000P
L1102 ELF15N003A
D1103 DF08S-6622
LB1107 J0JKB0000028
R1102 1M
R1103 1M
C1106 400V33
LB1109 J0JKB0000028

T1101 ETS29AZ286AC
P2
P1
B2
B1
S7
S6
S5
S4B
S4A
S2
S3
S1

HEATER DC (-) Ⓡ Ⓣ
C1206 10V100
D1209 11EQS04
HEATER DC (+) Ⓡ
D1208 MA185
C1205 50V56
UNREG -29V Ⓡ
D1204 21DQ10FC4
L1201 22u
C1203 25V820
C1209 25V100
R1206 33K
R1207 33K
UNREG 14V Ⓡ Ⓢ
D1206 11EQS04
D1207 11EQS04
L1202 22u
C1204 10V1800
C1208 10V330
UNREG 6V Ⓡ
D1201 MA185
C1202 50V56
D1107 MA7510
UNREG 36V Ⓡ
GND Ⓡ
TO BOTTOM PLATE

Q1101 2SK2876 (VOLTAGE CONTROL)
R1104 1K
R1105 100
C1107 270P
C1201 3300P
LB1210 0
LR1101 VLP0392
LB1106 J0JHC0000070
C1112 1000P

Q1102 FS4KM-12A-AS (VOLTAGE CONTROL)
C1108 0.022
R1106 330
R1110 100K
D1108 B0HAGN000006

Q1104 2SD1992A (VOLTAGE CONTROL)
R1109 1800
D1104 MA4027L
D1106 MA185
C1109 0.047
D1105 MA165
R1107 100
Q1103 2SC3311A (VOLTAGE CONTROL)
R1108 0.51 (1W)

Q1201 PC123ZY2
C1110 0.1
R1113 33
R1112 3.3
R1111 330
C1111 0.01
R1202 270
R1201 2200

IC1201 uPC1093J
C1207 0.1
R1204 12K
R1203 22K
R1208 8200
R1209 56K
R1205 2200

NOTE1:WHEN MEASURE THE VOLTAGE OR WAVEFORM ON THE POWER TRANSFORMER CIRCUIT,SET THE GND TERMINAL OF MEASURING POINT AS FOLLOWS.
PRIMARY SIDE..... ⏚
SECONDARY SIDE... ⏚
NOTE2:THE DC VOLTAGE INDICATED IN PRIMARY SIDE IS SHOWN THE VOLTAGE WHEN INPUT AC IS 240V.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.
NOTE:THE MEASURMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,USE ONLY THE SAME TYPE.

NV-FJ623EG/EGY,FJ628EE
POWER TRANSFORMER
SECTION SCHEMATIC DIAGRAM

Ⓟ :TO POWER TRANSFORMER SECTION
Ⓢ :TO SYSTEM CONTROL & SERVO SECTION
Ⓥ :TO LUMINANCE & CHROMINANCE/AUDIO SECTION
Ⓐ :TO HI-Fi AUDIO SECTION
Ⓘ :TO INPUT/OUTPUT SECTION
Ⓣ :TO TIMER SECTION

VIDEO MAIN SIGNAL PATH IN REC MODE
VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE
AUDIO MAIN SIGNAL PATH IN REC MODE
AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE

Q1002
2SD602A
(BUFFER)

Q1006
2SD601A
(FIP ON/OFF CONTROL)

QR1001
UN2112
(FIP Ⓛ :ON)

Q1008
2SB710A
(POWER SAVE:OFF)

Q1007
2SC1959Y
(12V REG.)

QR1002
UN2211
(SLEEP Ⓛ:OFF)

Q1010
2SC1959Y
(5V REG.)

Q1001
2SC1959Y
(5V REG.)

Q1011
2SD601A
(POWER OFF Ⓗ:ON)

Q1005
2SD602A
(5V REG.)

Q1003
2SC1959Y
(5V REG.)

Q1004
2SC1959Y
(5V REG.)

QR7601
UN2215
(MUTE)

TU7601
TUNER UNIT
ENG47327G1:EG/EGY
ENG47329G1:EE

DU7601
TO TV DEMODULATOR PACK PK0701(D-1)

PK7301
TO DECODER PACK PK7301(F-1):EG/EGY
TO NICAM DECODER PACK PK7301(D-1):EE

PK7302
TO DECODER PACK PK7302(D-1):EG/EGY
TO NICAM DECODER PACK PK7302(C-1):EE

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,USE ONLY THE SAME TYPE.

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-FJ623EG/EGY,FJ628EE
POWER SUPPLY/RF
SECTION SCHEMATIC DIAGRAM

Ⓟ :TO POWER TRANSFORMER SECTION
Ⓡ :TO POWER SUPPLY/RF SECTION
Ⓥ :TO LUMINANCE & CHROMINANCE/AUDIO SECTION
Ⓐ :TO Hi-Fi AUDIO SECTION
Ⓘ :TO INPUT/OUTPUT SECTION
Ⓣ :TO TIMER SECTION

CAPSTAN SERVO SPEED LOOP
CAPSTAN SERVO PHASE LOOP
CYLINDER SERVO SPEED LOOP
CYLINDER SERVO PHASE LOOP

IC6001
C2CBJG000215

IC1502
RPI354N
(S-REEL)

IC1501
RPI354N
(T-REEL)

Q1501
PNB2301MBV
(T-PHOTO)

Q1502
PNB2301MAV
(S-PHOTO)

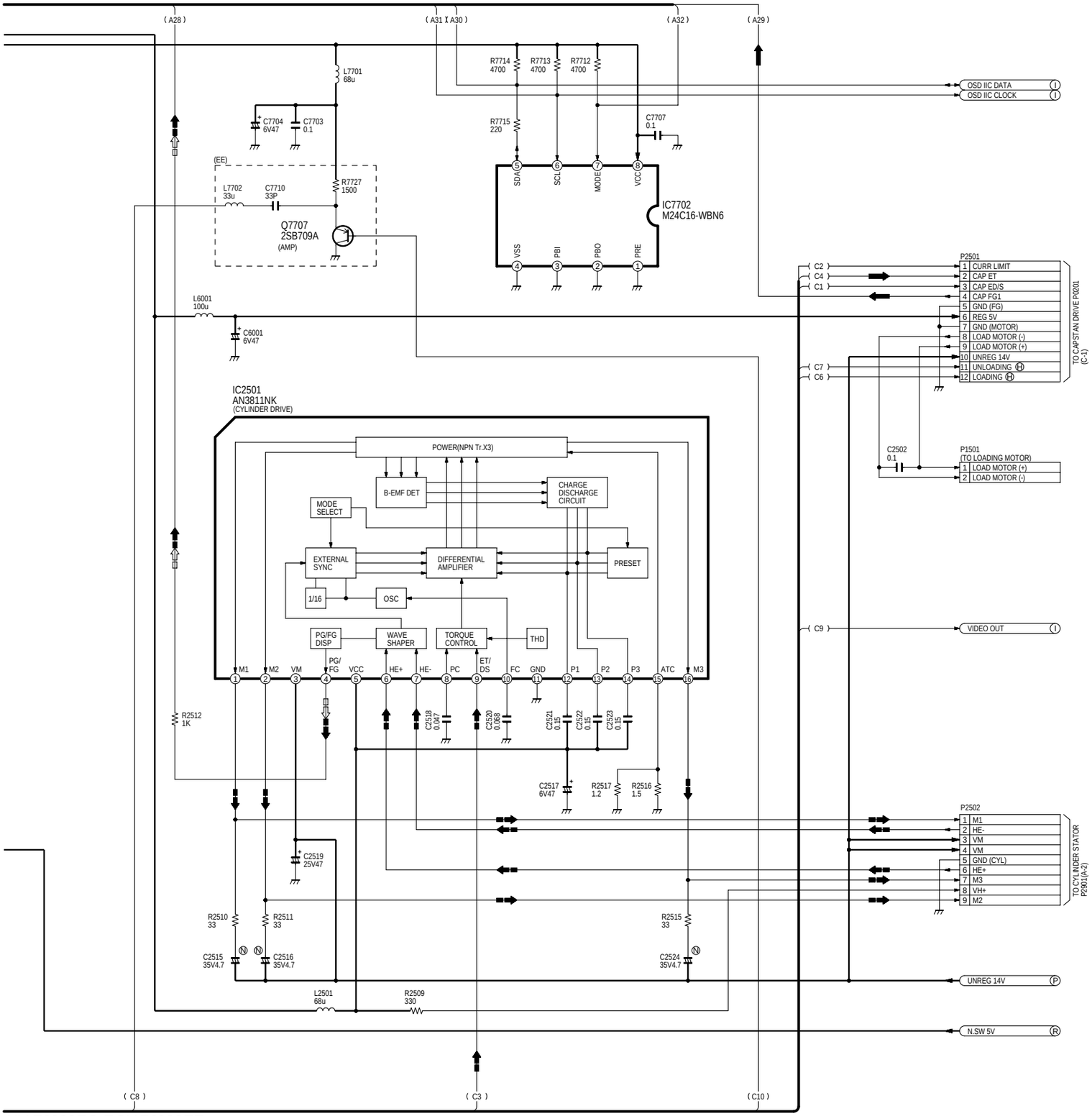
SENSOR
D1501
SIR505S

MODE SW
S1501
K0G934A-00002

QR6001
UN2215
(AV1 PB Ⓛ :OFF)

QR6006
UN2211
(SLEEP Ⓛ :OFF)

NV-FJ623EG/EGY,FJ628EE
SYSTEM CONTROL & SERVO SECTION SCHEMATIC DIAGRAM



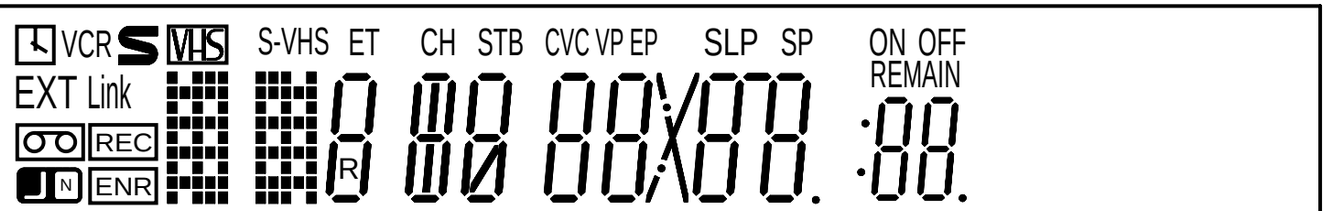
NV-FJ623EG/EGY,FJ628EE
SYSTEM CONTROL & SERVO SECTION SCHEMATIC DIAGRAM

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-FJ623EG/EGY,FJ628EE
SYSTEM CONTROL & SERVO
SECTION SCHEMATIC DIAGRAM

Ⓟ :TO POWER TRANSFORMER SECTION
Ⓡ :TO POWER SUPPLY/RF SECTION
Ⓢ :TO SYSTEM CONTROL & SERVO SECTION

DP7501
A2BD00000040



R7507 56
R7508 56
C7501 0.01
Ⓡ HEATER (+)
Ⓟ HEATER DC (-)
D7501 MA4220NM
C7502 50V10
R7511 820
R7510 820
Ⓡ FIP -29V
R7509 75

F+ F+ P1 P2 P3 P4 P5 P6 P7 P8 NC P9 P10 P11 P12 P13 P14 P15 P16 P17 P18 NC NC NC NC NC NC NC NC NC 1G 2G 3G 4G 5G 6G 7G NC NC F- F-
1 2 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 44 45

-28.4 -28.3 -29.0 -29.4 -28.3 -28.1 -28.5 -24.3 -29.0 -24.3 -24.1 -24.3 -19.0 -24.3 -24.1 -14.3 -29.4 -29.4
36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19
S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 S13 S14 S15 S16 S17 VEE

IC7501
M35502AFP

4.9 5.0 2.4 5.2 5.2 5.2 5.2 2.3 5.2 -24.8 -24.8 -24.8 -24.8 -24.8 -24.8 -24.8 -29.4
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
S DATA S CLOCK CS Ⓛ A3 A2 A5 A4 VSS OSC VCC G1 G2 G3 G4 G5 G6 G7 S18

C7503 12P

Ⓢ S.DATA
Ⓢ S.CLOCK
Ⓢ FIP CS
Ⓢ SAFETY TAB Ⓛ
SAFETY TAB
S7507 K0C111A00003
POWER
S7506 EVQPC005B
Ⓢ POWER SW
R7521 22K
Ⓢ IR
Ⓡ N.SW 5V
Ⓡ GND
Ⓢ P.FAIL Ⓛ
Ⓢ RESET Ⓛ
Ⓢ BACK UP 5V

IC7502
PNA4618M08V
(IR RECEIVER)
R OUT GND VCC
1 2 3
5.2 5.2

R7517 10K
R7518 10K
R7513 30K
R7515 30K
R7516 30K
R7514 30K

IC7504
C0EBH0000218
(RESET)
RST VDD VSS
1 2 3 4 5
5.2 5.2
C7511 0.1

IC7503
C0EBE0000211
(RESET)
OUT VDD GND CD
1 2 3 4 5
4.9 4.9 4.4 0
C7510 0.01
R7535 10K
C7504 6V100
C7509 6800P

D7503 RB441PT-77
R7534 180
C7507 VCE0073
C7508 6V220

CH UP S7504 EVQ11404M
PAUSE S7503 EVQ11404M
PLAY S7511 EVQ11L07B
REW S7512 EVQ11G07K
R7506 4300
R7505 5600
R7504 8200
R7537 12K

CH DOWN S7502 EVQ11G07K
REC S7501 EVQ11G07K
STOP S7515 EVQ11L07B
TIMER REC S7513 EVQ11L07B
FF S7514 EVQ11G07K
R7503 4300
R7502 5600
R7501 8200
R7538 12K

EXT LINK S7516 EVQ11G07K
EJECT S7505 EVQ11L07B
INTELLIGENT TIMER S7517 EVQ11L07B
R7519 4300
R7536 5600
R7539 8200

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE:DO NOT USE PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-FJ623EG/EGY,FJ628EE
TIMER SECTION SCHEMATIC DIAGRAM

F E D C B A
1 2 3 4 5 6 7 8 9

VIDEO SIGNAL PATH

AUDIO SIGNAL PATH

(EE)

R0714 5600

R0732 4700

R0731 100

LB0701 VLP0147

R0713 0

R0740 470:EG/EGY 270:EE

R0729 10K

R0730 10K

(EG/EGY)

C0724 220P

R0717 470

R0711 180

R0745 3.3M

T0701 EVQ5EC082P:EG/EGY EVQ5EC081P:EE

C0707 50V2.2

(EE)

R0709 100K

R0727 0

C0719 0.1

C0708 50V 0.47

C0717 33P

PK0701

TO POWER SUPPLY/ RF SECTION DU7601 (D-10)

DU7601-19	SW1	1
DU7601-20	SW2	2
DU7601-21	———	3
DU7601-22	SIF/QPSK	4
DU7601-23	AFC S-CURVE	5
DU7601-24	TUNER VIDEO	6
DU7601-25	TUNER 5V	7
DU7601-26	———	8
DU7601-27	GND	9

1.6 2.4 2.6 5.0

R0742 150

Q0702 2SD601A (AMP)

3.6 3.3 2.6

R0741 220

C0721 120P:EG/EGY 56P:EE

R0743 1K

3.1 2.4 1.6 3.0 2.7 2.2 3.3 4.3 4.3 1.8 0 1.3

1 2 3 4 5 6 7 8 9 10 11 12

IC0701 LA75503

BPF

AMP SW

EQ AMP

TRAP

LPF

VCO

FLL

BPF

AGC

AFT AMP

LIM AMP

VIDEO DET

APC DET

1ST SIF DET

S PLL

FM DET

FIL CONT

VIF AMP

IF AGC

1ST AMP

DEEMPHP

RF AGC

24 23 22 21 20 19 18 17 16 15 14 13

2.6 2.4 2.2 3.3 2.8 2.8 5.0 1.6 0.1 4.0 2.4

D0702 0

C0701 1

C0713 6V330

C0704 0.033

R0705 4700

R0708 10K

C0714 1

VR0701 10KB

R0707 39K

C0702 1000P

C0703 1

R0719 4700

C0712 0.1

X0704 VLF1493:EG/EGY VLF1497:EE

10 8 7 6

1 2 3 4 5

L0701 0.18u:EG/EGY 0.27u:EE

(EE)

X0702 VLF1431

X0701 VLF1416:EG/EGY VLF1430:EE

C0710 0.01

L0703 2.2u

R0725 100

C0715 3P

PP0701 (TO TUNER UNIT)

4MHz	1
AGC	2
IF	3
GND	4

C0711 16V22

R0715 22K

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-FJ623EG/EGY,FJ628EE

TV DEMODULATOR PACK SCHEMATIC DIAGRAM

F E D C B A

1 2 3 4 5 6 7 8

Ⓡ :TO POWER SUPPLY/RF SECTION
Ⓢ :TO SYSTEM CONTROL & SERVO SECTION
Ⓐ :TO Hi-Fi AUDIO SECTION
Ⓘ :TO INPUT/OUTPUT SECTION

VIDEO MAIN SIGNAL PATH IN REC MODE
VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE
AUDIO MAIN SIGNAL PATH IN REC MODE
AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE

P4003
(TO A/C HEAD)
AUDIO ERASE IN 1
GND 2
A.HEAD (R) 3
A.HEAD (W) 4
CTL HEAD (-) 5
CTL HEAD (+) 6

R4030 8200
C4032 220P
T4002 EQQ7QF024P
C4031 0.022
R4029 3300
0.3 (-0.6)
0.4 (4.7)
Q4006 2SD602A (OSC)
C4029 1500P
L4003 68u
C4030 6V220
C4028 0.022
0.4 (4.9)
5.0 (4.1)
Q4005 2SB710 (AUDIO ERASE DRIVE)
R4028 2700
C4026 10V22
R4027 3300
5.0
R4026 4700

Ⓢ CTL HEAD (+)
Ⓢ CTL HEAD (-)
Ⓢ SHORT DET Ⓛ
Ⓢ BIAS Ⓛ

P4002
(TO FULL ERASE HEAD)
FULL ERASE OUT 1
FULL ERASE IN 2

Ⓢ HEAD SW A1
Ⓢ H.AMP SW A2
Ⓢ ENV. SELECT A3
Ⓢ TRACKING ENV. A4
Ⓢ D.REC Ⓗ A5
Ⓢ CURR. EMPH Ⓗ A6
Ⓡ TUNER AUDIO (N) A7
Ⓐ FM MUTE A8
Ⓐ AUDIO OUT (N) A9
Ⓢ MUTE Ⓗ A10
Ⓐ AUDIO IN (N) A11

P3502
(TO CYLINDER UNIT)
LP R 1 A15
LP COM 2 A16
LP L 3 A17
SP R 4 A18
SP COM 5 A19
SP L 6 A20
GND 7
AUDIO HEAD L 8
AUDIO HEAD COM 9
AUDIO HEAD R 10

Ⓐ AUDIO HEAD R
Ⓐ AUDIO HEAD COM
Ⓐ AUDIO HEAD L

Ⓢ D.A.REC Ⓗ
Ⓢ PAL EP Ⓗ

Ⓡ BIAS 5V
Ⓡ VIDEO 5V
Ⓡ GND

R4009 2200
0.7 (-23.1)
0(3.6)
Q4001 2SD601A (PB:ON)
0 (-14.9)
R4010 2200
0.7 (-23.1)
Q4002 2SD601A (PB:ON)
0 (4.9)
5.0(-23.0)
QR4003 UN2111 (D.A.REC Ⓗ:OFF)
5.0

R4001 1K

QR4001 UN2212 (PAL EP Ⓗ :ON)
C4001 2200P

IC3501
AN3368SB

TW2001
A1
A2
C3002 1000P
C3003 1000P
1 HEAD SW 2.4
2 HEAD AMP SW 0
3 (A19) 0 (2.7)
4 (A20) C3506 0.1, LB3501 VLP0147, 0.7 (2.9)
5 GND
6 (A18) C3507 0.1, LB3502 VLP0147, 0.7 (2.9)
7 (A17) C3508 0.1, LB3503 VLP0147, 0.7 (2.4)
8 GND
9 (A15) C3509 0.1, LB3504 VLP0147, 0.7 (2.4)
10 (A16) 0 (2.5)
11 0
12 NC 0
13 NC 0
14 NC 0
15 NC 0
16 NC 0
17 NC 0
18 NC 0
HA4
HA3
HA2
HA1
H
L
DET
DET
CMP
ZAP
CHROMA AMP
AT
VCC 36 5.0
NC 35 0
34 4.9 (A3)
33 0.8 (3.4) C3503 0.01
LP Ⓗ 32 0
31 1.4
30 2.4 (0)
GND 29
28 2.7 (1.9)
27 3.9 (2.2) (A4) C3505 0.01
NC 26 0
REC Ⓗ 25 0 (4.9) (A5)
NC 24 0
CURR.EMPH 23 0 (A6)
NC 22 0
NC 21 0
NC 20 0
NC 19 0

L3501 33u
C3501 6V47
C3502 0.01
TW3030
C3510 0.1
R3506 360
TW3001
R3501 100
C3511 0.1
R3503 390
R3504 300
QR3502 UN2212 (LP Ⓗ :ON)
B1
B2
B3

LB4908 0
C4946 2200P
QR4005 UN2113 (BUFFER) -0.4 (-0.1)
R4022 560

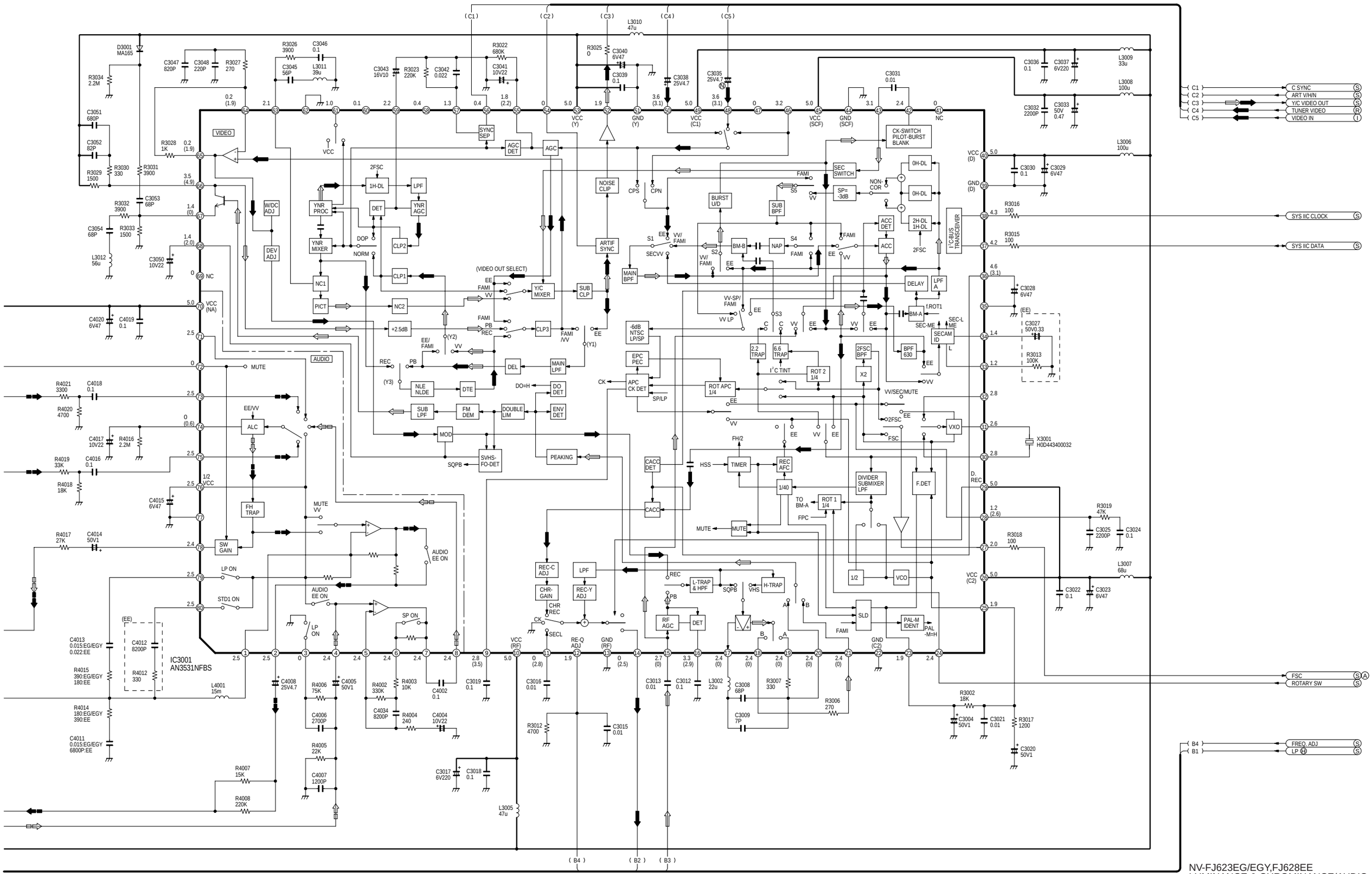
R4011 470
C4010 0.027
QR4002 UN2211 (PAL EP Ⓗ :ON)
C4009 1

(A7 X A8)
(A9 X A10 X A11)

NOTE:THE MEASUREMENT MODE OF THE DC VLOLTAGE IN THE BRACKETS( )ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR SIGNAL.(SP MODE)

THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL.(SP MODE)

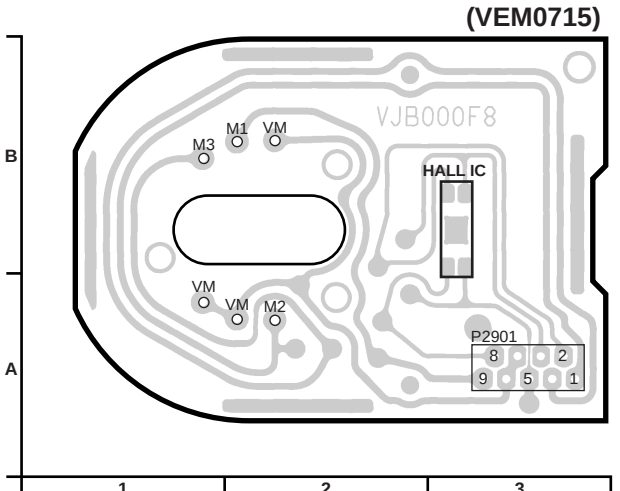
NV-FJ623EG/EGY,FJ628EE
LUMINANCE & CHROMINANCE/AUDIO SECTION SCHEMATIC DIAGRAM



NV-FJ623EG/EGY,FJ628EE
LUMINANCE & CHROMINANCE/AUDIO SECTION SCHEMATIC DIAGRAM

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-FJ623EG/EGY,FJ628EE
LUMINANCE & CHROMINANCE/AUDIO SECTION SCHEMATIC DIAGRAM



CYLINDER STATOR UNIT	
Integrated Circuit	
HALL IC	B-3
Connector	
P2901	A-3

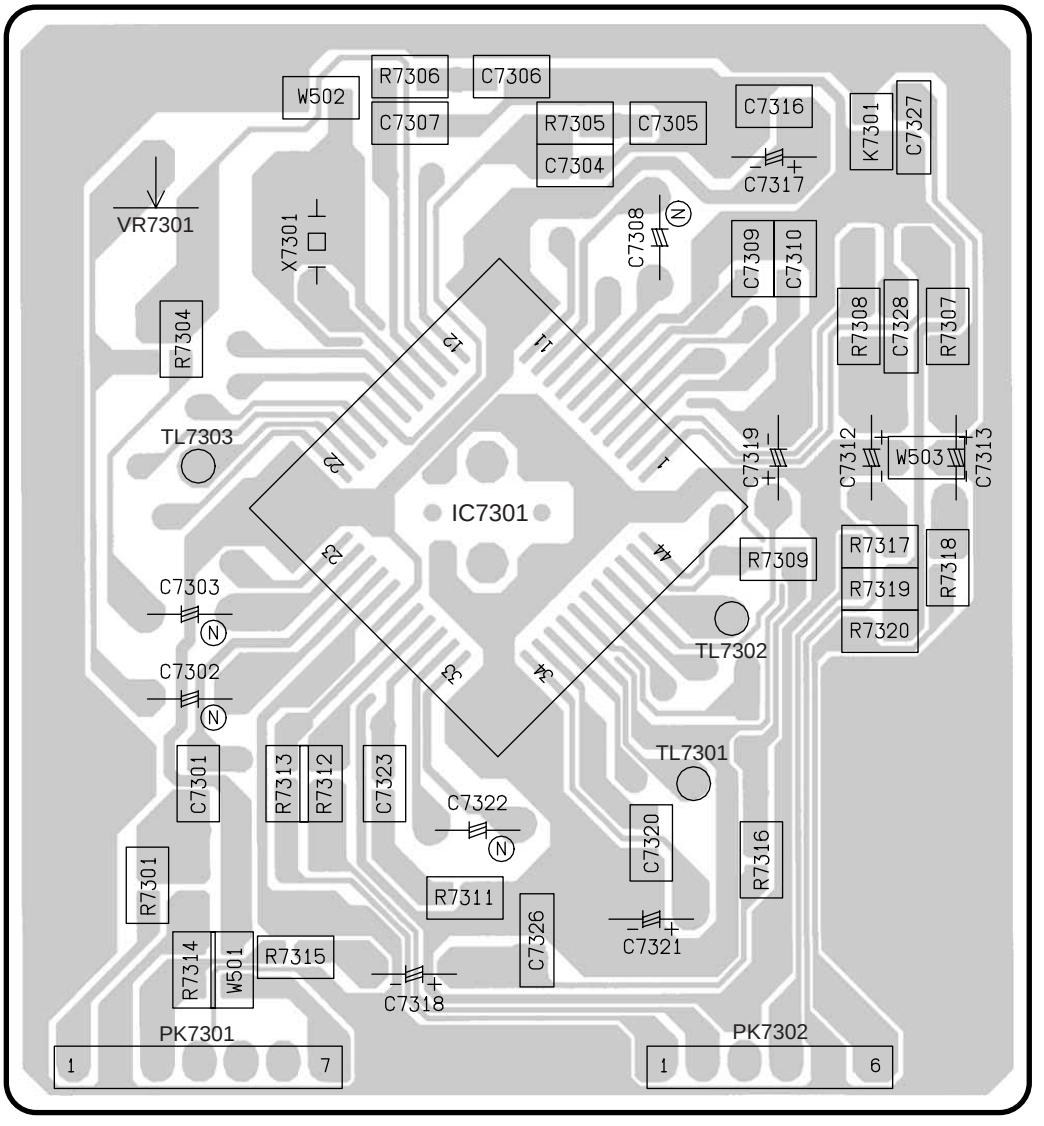
ADDRESS INFORMATION

NV-FJ623EG/EGY,FJ628EE
CYLINDER STATOR UNIT

DECODER PACK C.B.A.	
Integrated Circuit	
IC7301	B-2
Test Point	
TL7301	A-2
TL7302	B-2
TL7303	B-1
Adjustment	
VR7301	C-1
Connector	
PK7301	A-1
PK7302	A-2

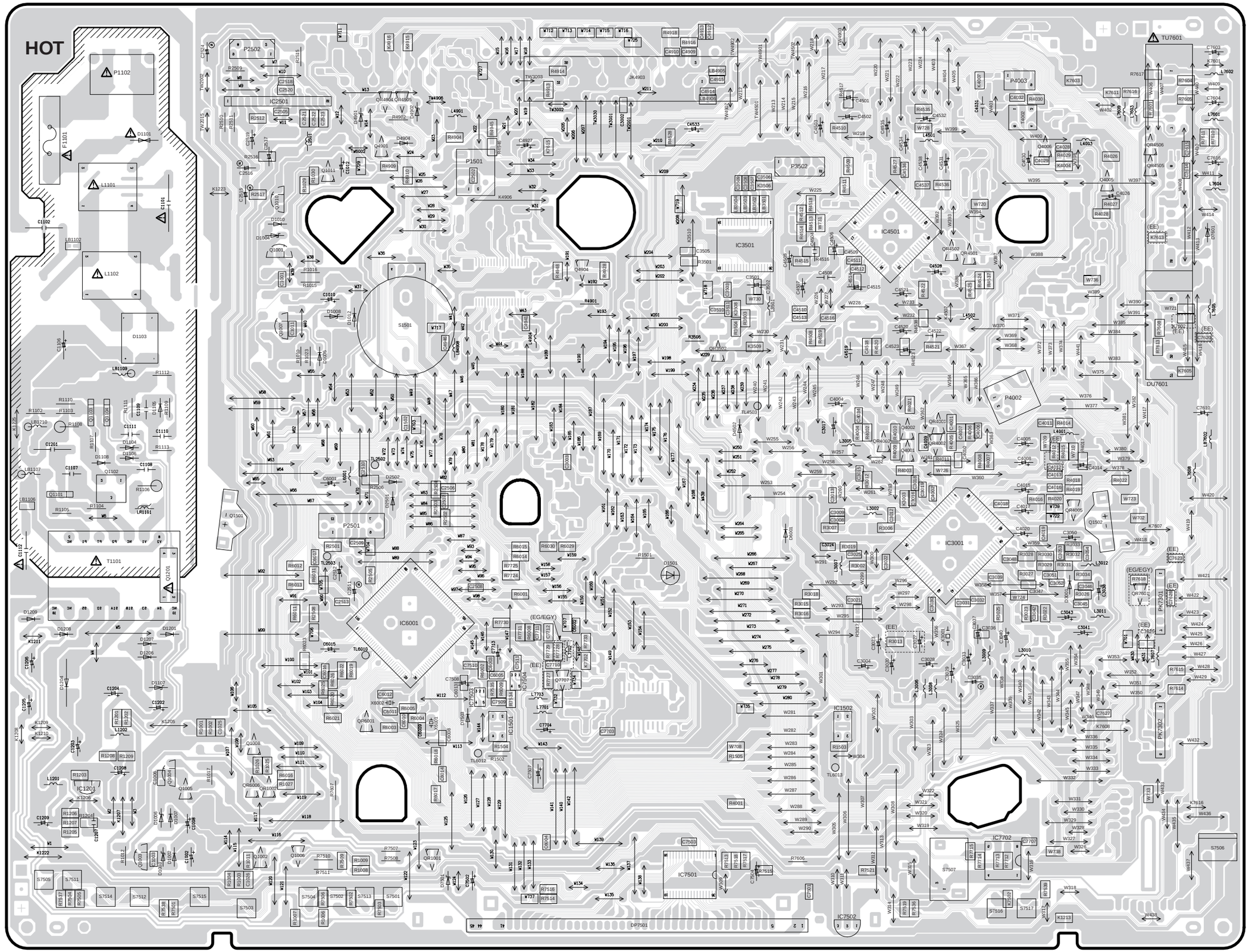
ADDRESS INFORMATION

(VEP07A16A:NV-FJ623EG/EGY)



NV-FJ623EG/EGY
DECODER PACK C.B.A.

(VEP06E55M:NV-FJ623EG/EGY)(VEP06E55Q:NV-FJ628EE)


HOT
P1102
F1101
D1101
L1101
C1101
C1102
LB1102
L1102
D1103
C1106
LB1109
R1112
R1110
R1103
R1102
LB1110
R1108
Q1103
Q1104
R1111
C1109
D1105
R1109
C1111
C1110
C1201
D1108
D1104
D1106
R1113
LB1107
C1107
Q1102
C1108
R1106
Q1101
LB1106
R1105
R1104
LR1101
T1101
Q1201
C1112
D1209
D1208
D1201
D1207
D1206
K1211
C1206
D1204
C1205
D1107
C1204
C1202
K1209
K1210
K1208
L1202
R1208
R1209
C1208
C1203
L1201
R1203
IC1201
K1206
C1209
R1206
R1204
R1207
R1205
C1207
R1101
Q1003
D1003
D1002
C1003
C1002
R1102
R1103
R1104
R1105
R1106
R1107
R1108
R1109
R1110
R1111
R1112
R1113
C1101
C1102
C1103
C1104
C1105
C1106
C1107
C1108
C1109
C1110
C1111
C1112
C1201
C1202
C1203
C1204
C1205
C1206
C1207
C1208
C1209
D1101
D1102
D1103
D1104
D1105
D1106
D1107
D1108
D1201
D1204
D1206
D1207
D1208
D1209
F1101
IC1201
L1101
L1102
L1201
L1202
LB1102
LB1106
LB1107
LB1109
LB1110
LR1101
Q1001
Q1002
Q1003
Q1004
Q1005
Q1006
Q1007
Q1008
Q1010
Q1011
Q1101
Q1102
Q1201
R1001
R1002
R1003
R1004
R1005
R1006
R1007
R1008
R1009
R1010
R1011
R1012
R1013
R1014
R1015
R1016
R1017
R1018
R1019
R1020
R1021
R1022
R1023
R1024
R1025
R1026
R1027
R1028
R1029
R1030
R1031
R1032
R1033
R1034
R1035
R1036
T1101
P2502
P2501
P1501
P3502
IC2501
IC6001
IC3501
IC4501
IC1502
IC3001
IC7702
IC7501
IC1501
IC7504
IC1503
IC7503
IC7502
P4003
P4002
TU7601
DU7601
S1501
Q1501
S7501
S7502
S7503
S7504
S7505
S7506
S7507
S7508
S7509
S7510
S7511
S7512
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S7514
S7515
S7516
S7517
DP7501
D1501
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D1539
D1540

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

CAUTION

THE STRIPED FRAME INDICATES THE PRIMARY CIRCUIT TO DISTINGUISH THE PRIMARY FROM THE SECONDARY CIRCUIT.
PAY ATTENTION NOT TO RECEIVE AN ELECTRIC SHOCK DURING REPAIR AND SERVICE OF THE PRODUCTS.

MAIN C.B.A.

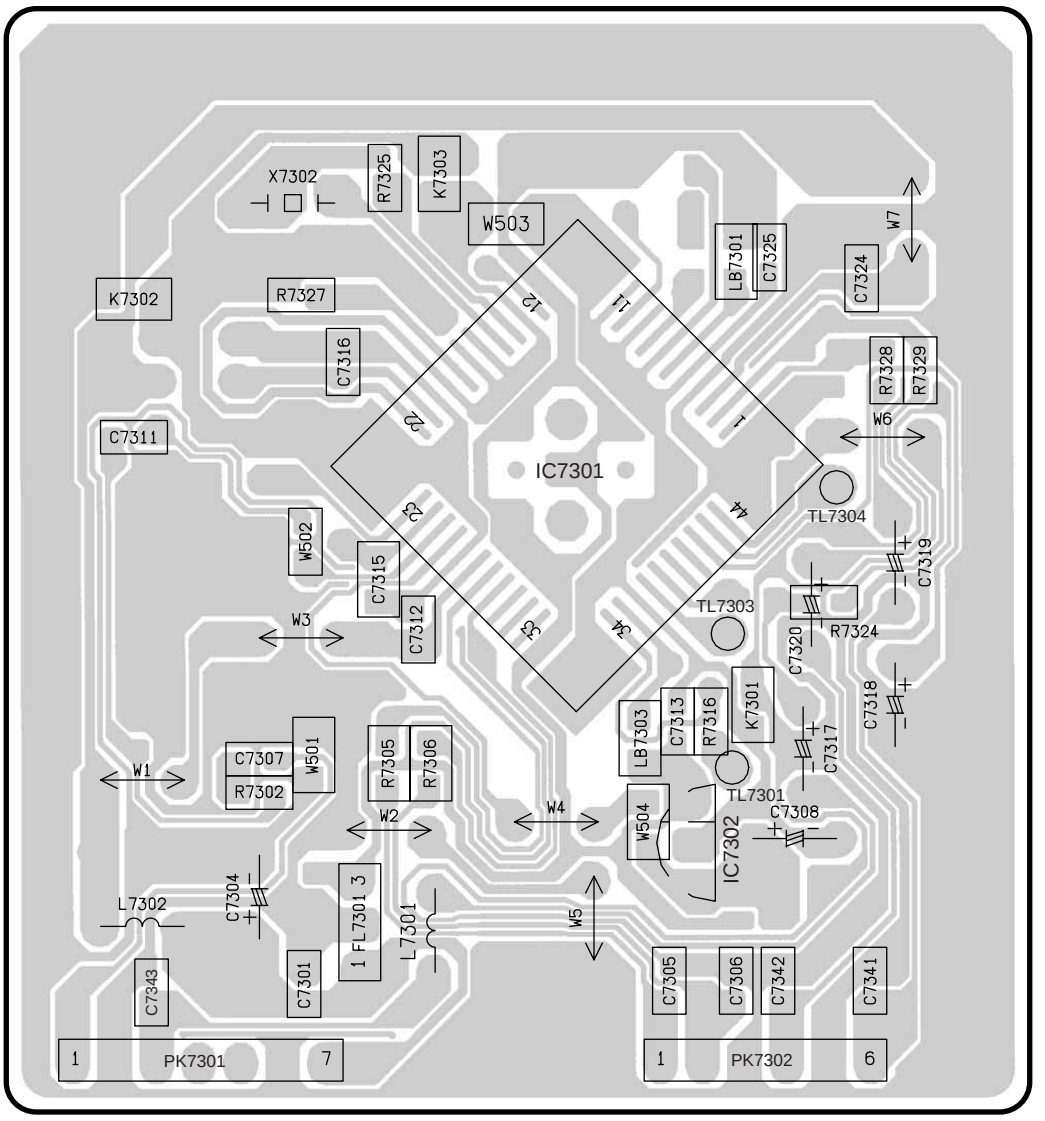
Transistor		**Integrated Circuit**	
Q1001	E-2	IC1201	B-1
Q1002	A-2	IC1501	B-4
Q1003	A-1	IC1502	B-6
Q1004	B-2	IC2501	F-2
Q1005	B-2	IC3001	C-6
Q1006	A-2	IC3501	E-5
Q1007	E-2	IC4501	E-6
Q1008	B-2	IC6001	C-3
Q1010	E-2	IC7501	A-5
Q1011	E-3	IC7502	A-6
Q1101	C-1	IC7503	B-4
Q1102	D-1	IC7504	B-4
Q1103	D-1	IC7702	A-7
Q1104	D-1	**Test Point**	
Q1201	C-2	TL2502	D-3
Q1501	C-2	TL2503	C-3
Q1502	C-7	TL4503	D-5
Q4001	D-6	TL6010	B-3
Q4002	D-6	TL6012	B-4
Q4005	E-7	TL6013	B-6
Q4006	F-7	TW2001	F-4
Q4901	F-3	TW2002	F-2
Q4904	E-4	TW2015	F-2
Q7707	B-4	TW3001	F-4
Transistor & Resistor		TW3002	F-4
QR1001	A-3	TW3003	F-4
QR1002	B-2	TW3030	F-4
QR3502	D-5	TW4501	F-5
QR4001	D-6	TW4502	F-5
QR4002	D-6	TW4901	F-5
QR4003	D-6	TW4902	F-5
QR4005	C-7	TW4903	F-6
QR4501	E-7	TW4906	F-3
QR4502	E-6	TW4907	F-5
QR4505	E-8	TW6002	F-3
QR4506	F-8	**Connector**	
QR4904	F-3	P1102	F-1
QR4905	F-3	P1501	E-4
QR6001	B-3	P2501	C-3
QR6006	B-2	P2502	F-2
QR7601	C-8	P3502	E-5
		P4002	D-7
		P4003	F-7
		DU7601	D-8
		PK7301	C-8
		PK7302	B-8
		TU7601	F-8

ADDRESS INFORMATION

NICAM DECODER PACK C.B.A.	
Integrated Circuit	
IC7301	B-2
IC7302	A-2
Test Point	
TL7301	A-2
TL7303	B-2
TL7304	B-2
Integrated Circuit	
PK7301	A-1
PK7302	A-2

ADDRESS INFORMATION

(VEP07A18T:NV-FJ628EE)



NV-FJ628EE
NICAM DECODER PACK C.B.A.

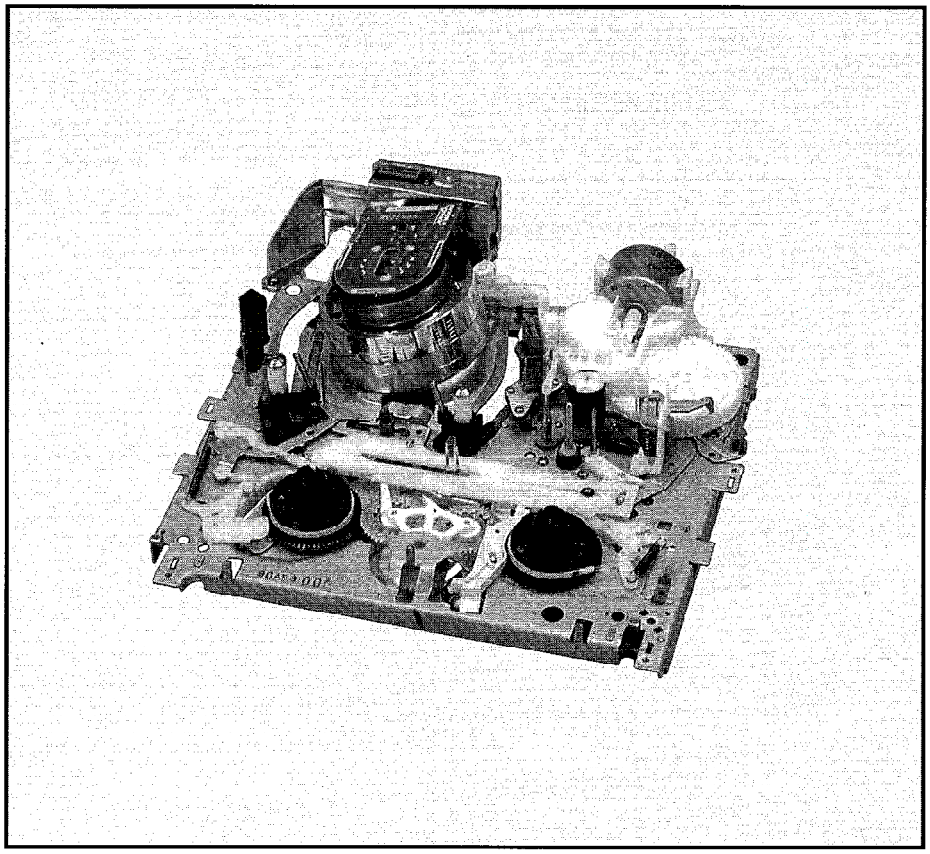
ORDER NO. VRD9612M129

Service Manual

Video Cassette Recorder

Panasonic VHS

Z-MECHANISM CHASSIS



INTRODUCTION

The Z-Mechanism chassis are built in several Panasonic VHS Video Cassette Recorders from NV-SD series in 1996.

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic

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1. OUTLINE OF Z MECHANISM

1-1. The tape transport path

(1) Mechanism Chassis

Aluminium Chassis has been changed to sheet metal (Thickness: 1.2 mm).

(2) Capstan position (Cassette-in method/Capstan-in method)

The Tape does not touch the Cassette tape so that the rationalization has been promoted such as Reel gear pinch up/down mechanism has been deleted.

(3) Deletion of P1 post

FE Head has been installed Limiter so that P1 post has been deleted.

(4) A/C Head base combined with P4 post

A/C Head has been combined with P4 post on the same base.

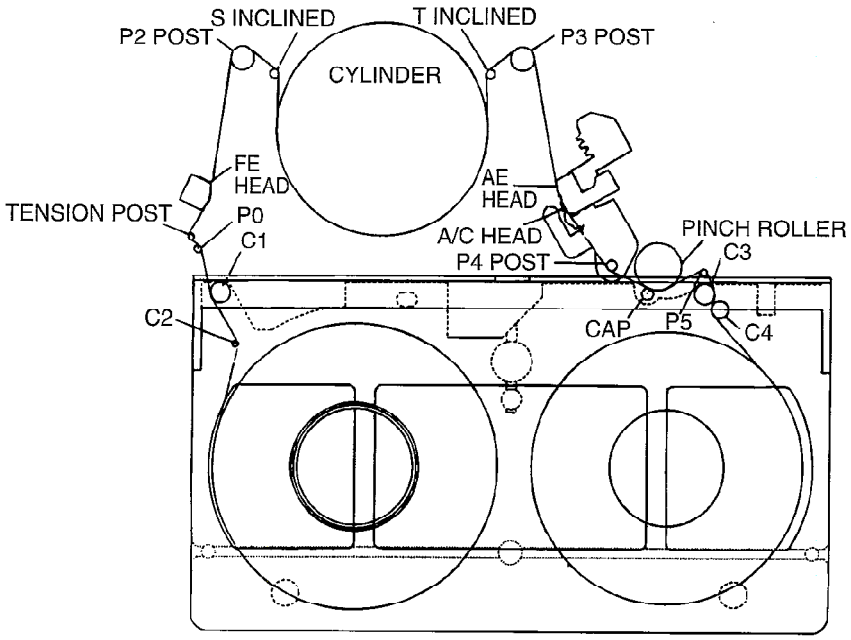
(5) Change of A/C head base type

The change of the angle winding the tape on A/C head has been reduced by the construction of A/C head base has been changed from the revolution type to slide base type.

(6) Improvement of P5 post

P5 post operation has been changed by non-adjustable of the Height and the Tilt adjustment so that the specification has been improved.

Z Mechanism tape transport path in REV mode



1-2. Cassette holder unit

(1) Cassette-in operation

The Rack drive arm drives Main Cam gear by inserting the cassette tape. Consequently, Position switch detects the cassette-in mode so that Loading motor drives. The mode goes to the Stop mode from the Cassette-in through the Loading mode.

① The parts quantity reduction of Cassette holder unit.
(Z Mechanism: 21 pieces, K Mechanism: 36 pieces)
a. Release lever has been installed in Right Side Plate.
b. Cassette guide has been installed in Front Panel unit.
c. Safety lever spring is made by the resin.
d. Opener lever has been changed into the single opener type.
e. One side of Side Plate unit is hung on Chassis in order to fix it.

② Improvement of the cassette insertion
(The force of the cassette insertion Z Mechanism: Approximately 400gm.,
K Mechanism: Approximately 600gm.)
The tooth pitch of Worm gear which has been extended against the previous model, is located on the Motor so that Worm gear can be reversed. Consequently, the Motor rotates before the insertion spring (the combined spring) is working when the cassette tape is inserted, so that the repelled force of the insertion spring has been reduced as differing from the present model.

③ Small-sized Cassette holder unit (Thinned unit)
a. The Wiper arm method which has been adopted, assigned Wiper arm between Cassette Holder Plate and Side Plate so that the small-sized of the width has been realized.
b. To prevent the increment of parts quantity such as Safety lever is used for Pre-open mechanism shown in the present model, and the small-sized unit has been realized by inclining one portion of the L groove in Side Plate.
c. The part of driving change-over is located in the nearest to the center of Reel so that the depth size is compacter.

1-3. Reel brake

(1) Supply Reel Brake is used for Tension Regulator which is composed of the conventional Main brake and the soft brake function.

(2) Take-up Reel Brake is used as Band Brake unit in order to correspond with Supply Reel Brake.

※ Tension Regulator performance:
This is composed of Tension regulator and brake. The tape always is given the tension against the advance direction by Tension band.

(3) Construction of Supply reel tension regulator
Comparison of the construction with the conventional model

	Z Mechanism	K Mechanism
Tension Arm Shaft Bearing construction	Resin	Tension arm
Tension Band	Felt less Lumiller	Felt Lumiller
Braking method	Tension regulator	Main & soft brake

Operating mode and necessary function

Mechanism mode	Necessary function	Operation
Cassette down	Prevention of the tape slag (Soft brake)	Soft brake
Completion of Loading	Prevention of the tape slag (Soft brake)	Tension regulator
REV	Prevention of in Play mode to REV mode (Soft brake)	Tension regulator
PLAY, FF	Back tension adjustment	Same as the conventional
STOP	Main brake function	Tension regulator

(4) Construction of Take-up brake

Take-up brake is used Band brake as well as Supply brake depend on corresponding with Band brake is adopted at the Supply Side.

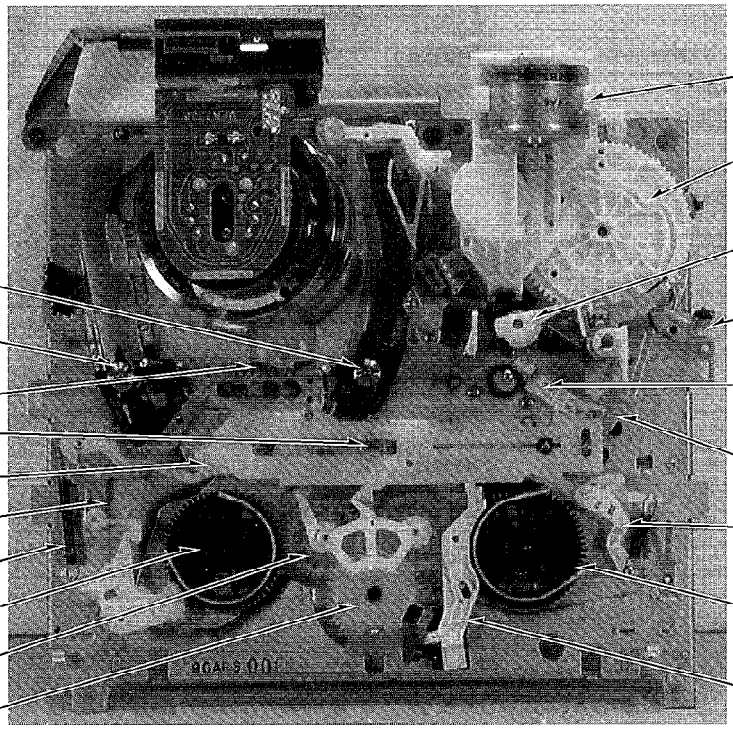
Mechanism mode	Function	Band
EJECT-MID	Soft brake	On
REV	Soft brake	On
PLAY	Release of brake	Off
STOP	Brake	On
FF/REW	Release of brake	Off

1-4. Number of Gear Phase Alignment Point and Replacement Parts

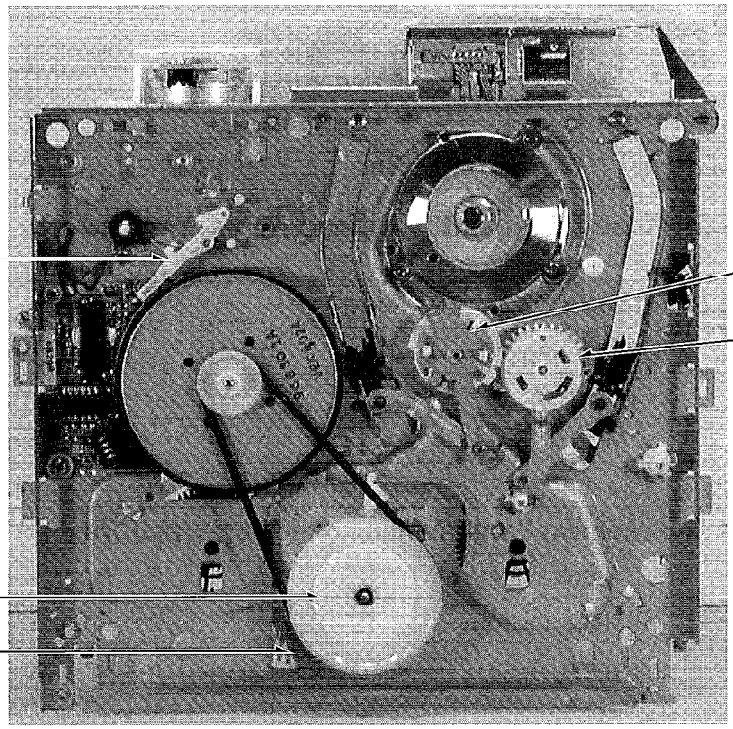
Number of Gear Phase Alignment Point	
G2 Mechanism	12 Alignment Points
G Mechanism	12 Alignment Points
K Mechanism	6 Alignment Points
Z Mechanism	4 Alignment Points
Number of Replacement Parts (including the Screw and Washer)	
G2 Mechanism	Approx.170 Pieces
G Mechanism	Approx. 150 Pieces
K Mechanism	Approx. 100 Pieces
Z Mechanism	Approx. 70 Pieces

Z Mechanism Components

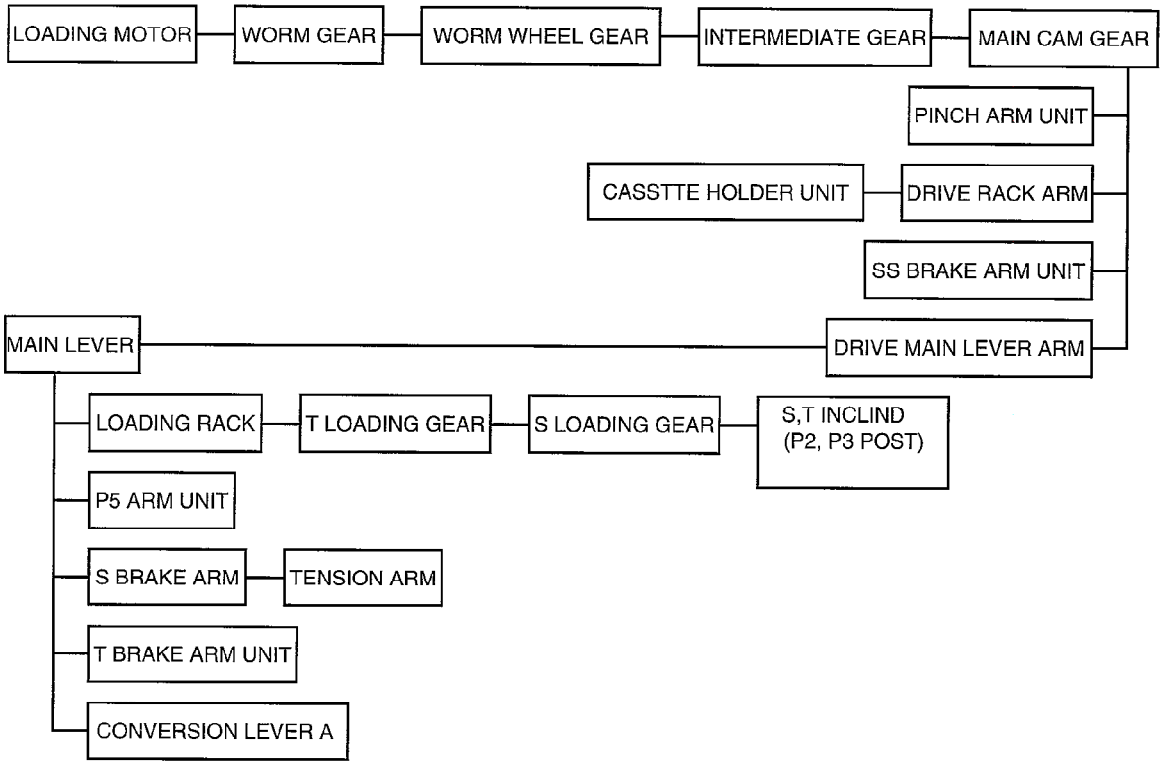
TOP VIEW

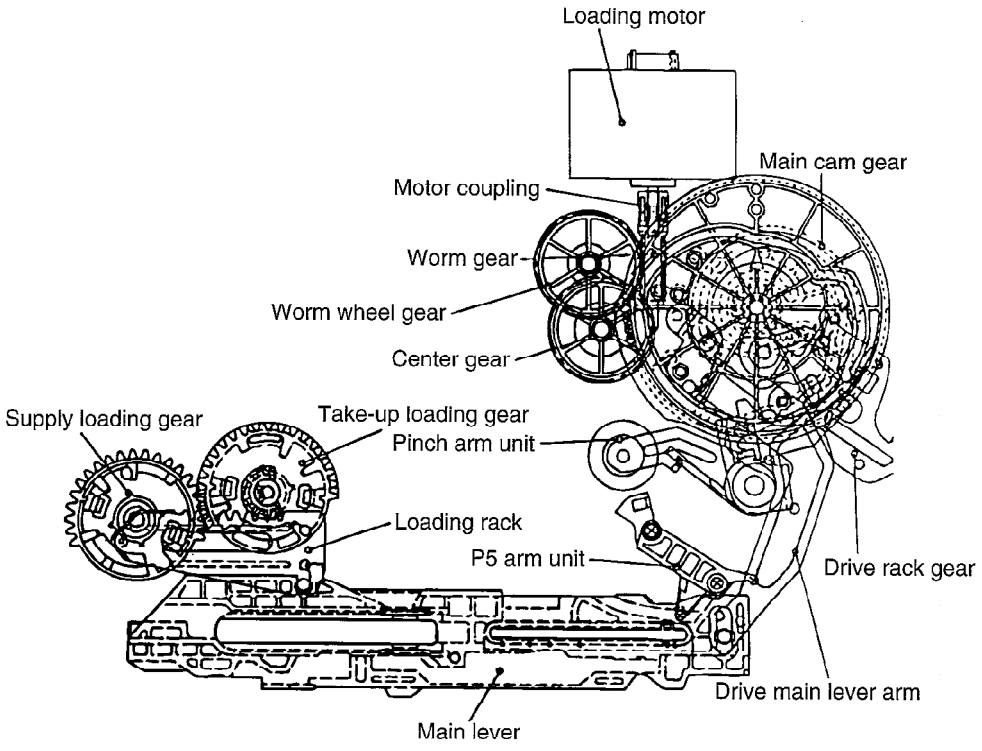


BOTTOM VIEW



FLOW CHART OF LOADING MECHANISM





2. REMOVAL OF CASSETTE TAPE

There are 2 ways to remove a cassette tape.

2-1. Removal of compulsory loading

(1) Press FF, REW and EJECT buttons simultaneously and set the Service Mode 7

(2) Press STOP button in order to unload the mechanism. (Pay an attention of tape slag)
Service Mode Indication :
7 ※※ ※※ (STOP)→7 00 ※※ (EJECT)

2-2 Removal of manual operation of Main cam gear

(1) Disconnect the AC power cord and remove Top Panel.

(2) Rotate Main cam gear to the clockwise and unload the mechanism (Tape is remaining) (Fig. A1).

TOP VIEW

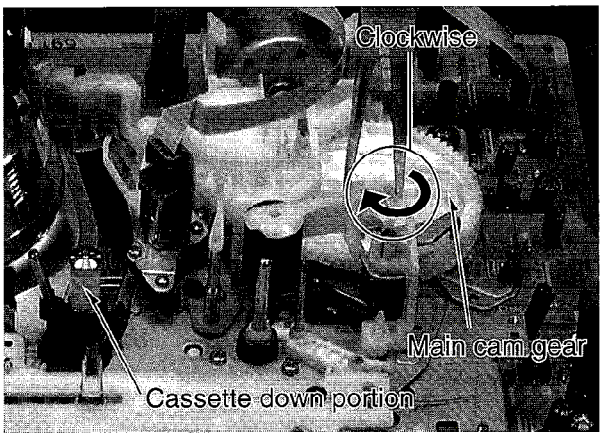


Fig. A1

(3) Rotate the Pole of Capstan motor to the clockwise from the bottom in order to remove the tape slag (Fig. A2).

BOTTOM VIEW

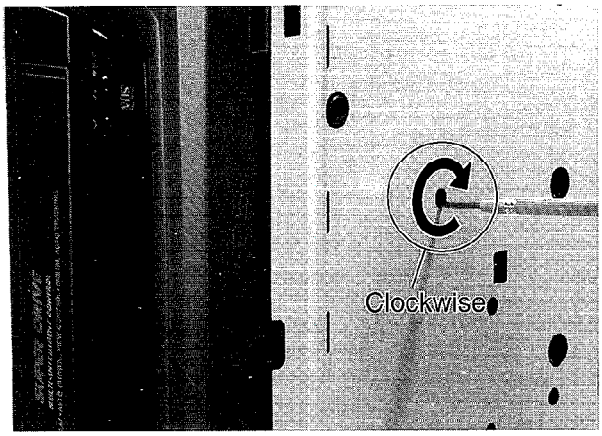


Fig. A2

(4) Rotate Main cam gear to the clockwise in order to eject the cassette tape.

3. REMOVAL OF CASSETTE HOLDER UNIT & MECHANISM CHASSIS

3-1. Removal of Cassette holder unit

(1) Remove Top panel and Front panel unit (Fig. B1)

TOP VIEW

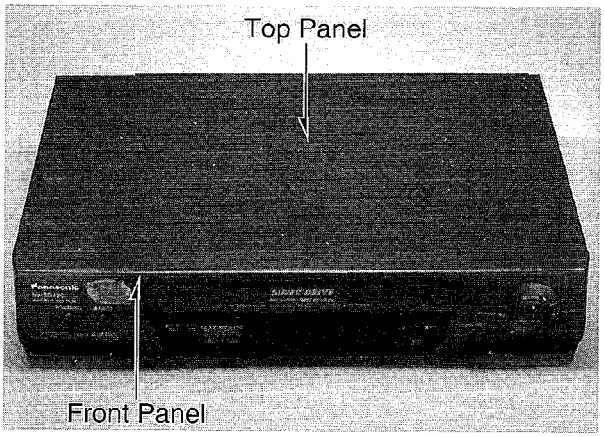


Fig. B1

(2) Remove Top plate

Remove 4 tabs fixing Top plate and remove Top plate (Fig. B2).

※ 4 Tabs should be removed softly duc to they are fragile.

TOP VIEW

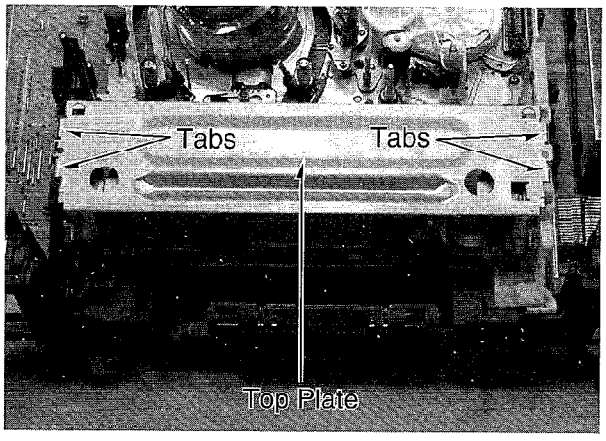


Fig. B2

(3) Remove Casscttc Holder Plate

Keep pressing 2 stoppers on Cassette holder Plate and Press Cassette holder plate to the rear and remove it from Left and Right Side Plate (Fig. B3).

TOP VIEW

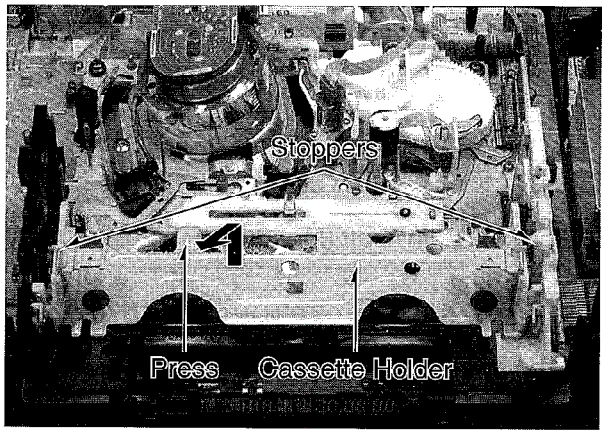


Fig. B3

(4) Remove Left and Right Side Plate

Remove Conjuction spring of Drive gear.

Remove 3 red screws, 3 tabs and remove Left and Right Side Plate (Fig. B4, B5).

TOP VIEW

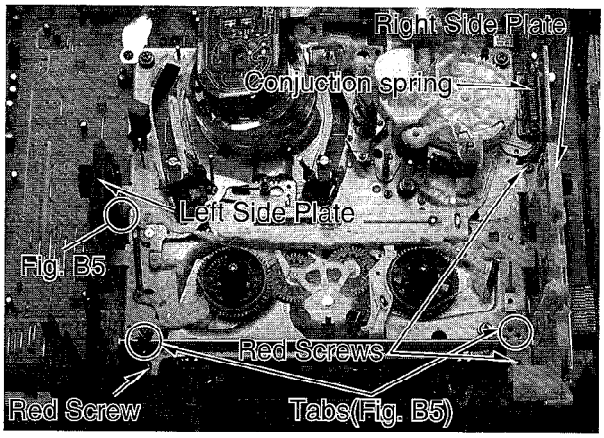


Fig. B4

TOP VIEW

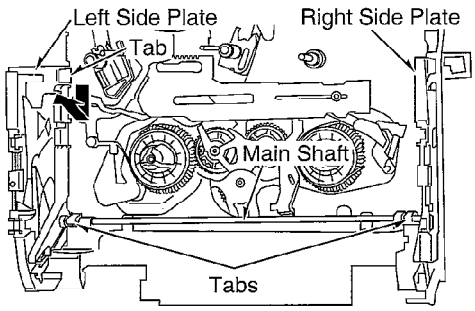


Fig. B5

(5) Remove Main shaft (Fig. B6)

TOP VIEW

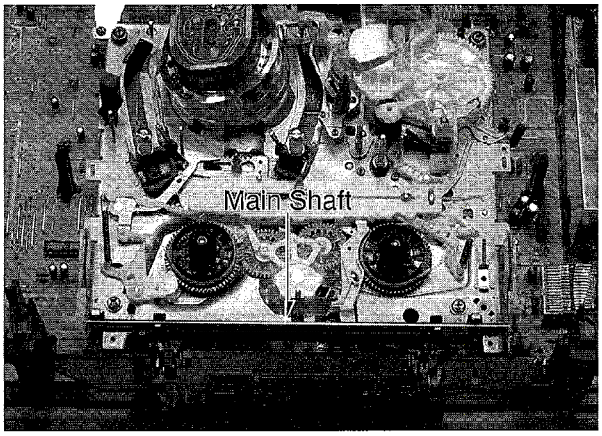


Fig. B6

3-2. Removal of Mechanism chassis

(1) Remove Mechanism chassis

Disconnect P3001, P2502 and P4001. Remove 5 screws (3 red screws and 2 gold screws) on Mechanism chassis and take out Mechanism chassis (Fig. B7).

TOP VIEW

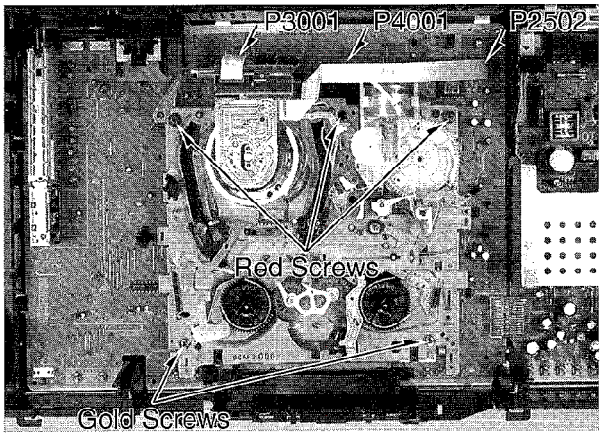


Fig. B7

4. DISASSEMBLY/ASSEMBLY METHOD FOR MECHANISM

4-1. Disassembly of mechanism

1. Removal of Pinch arm

   Unlock the tab (opener space). Remove Opener space and Pinch arm (Fig. C1).

2. Removal of Loading motor unit

   Unlock 3 tabs and remove Loading motor unit (Fig. C1 C2)

   2 tabs of them located on the bottom of the Mechanism (Fig. C2).

TOP VIEW

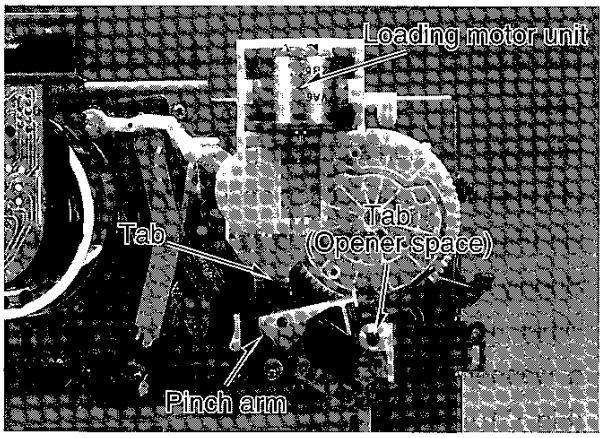


Fig. C1

BOTTOM VIEW

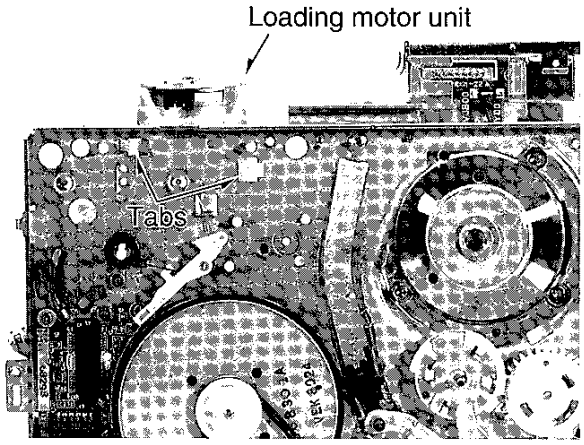


Fig. C2

3. Removal of Main cam gear

   Remove Snap washer located on the bottom of Chassis by using retaining ring remover (Fig. C3) and remove Main cam gear (Fig. C4).

BOTTOM VIEW

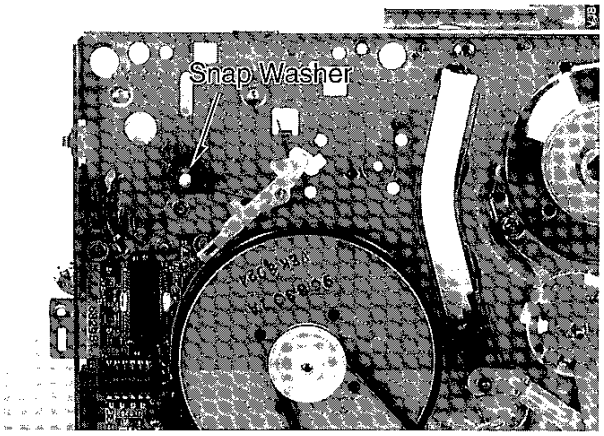


Fig. C3

TOP VIEW

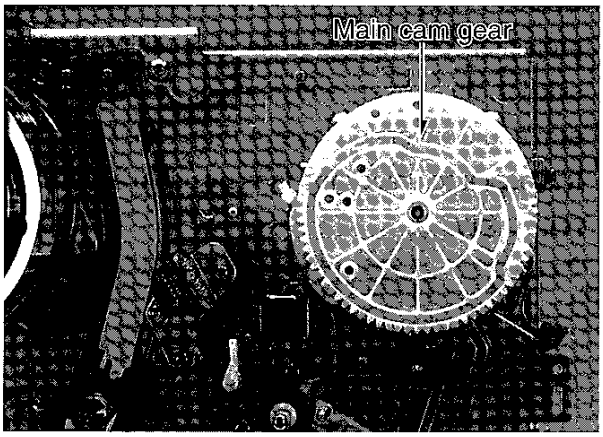


Fig. C4

4. Removal of Drive rack arm

Rotate Drive rack arm to the counterclockwise and remove it (Fig. C5)

TOP VIEW

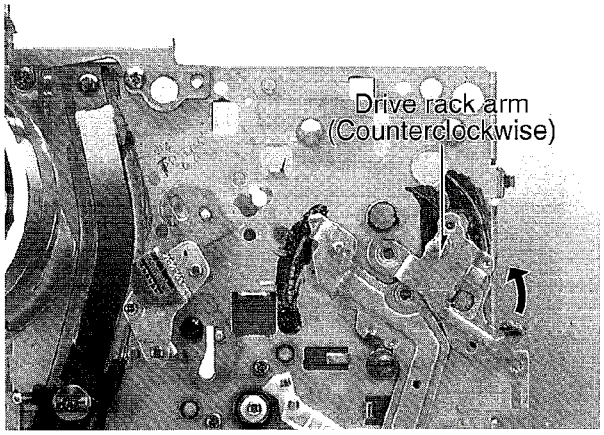


Fig. C5

5. Removal of Main lever, P5 arm and Conversion lever A

Removal cut washer located on the main lever. Unlock 2 tabs of Prism LED and 1 tab on the projection of Chassis while keep lifting the left side of Main lever, and remove Main lever, P5 arm and Conversion lever A (Fig. C6).

※ It is easier to unlock the tabs by using a tweezer.

TOP VIEW

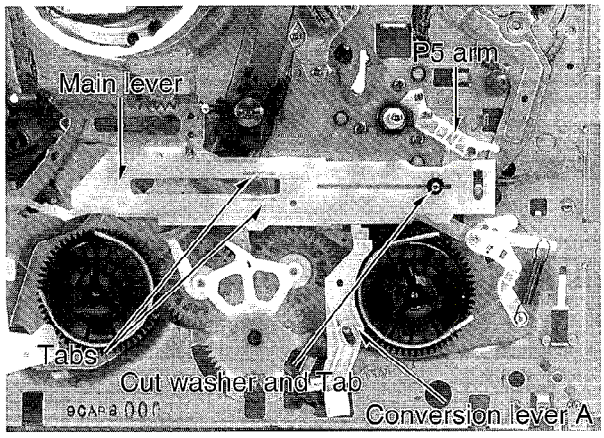


Fig. C6

6. Removal of Drive main lever arm

Rotate Drive main lever arm to the counterclockwise and remove it (Fig. C7).

TOP VIEW

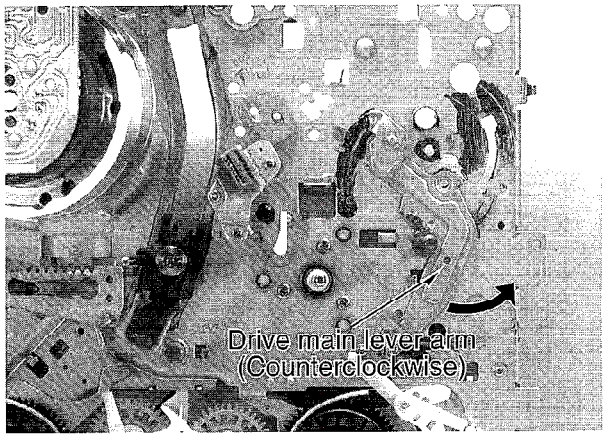


Fig. C7

7 Removal of Tension arm unit and Supply reel table

Remove Tension spring (Fig. C8). Unlock the tab of Tension arm projection on the bottom of Chassis (Fig. C9) and remove Tension arm unit and Supply reel table (Fig. C8).

※ When remove supply reel table, be sure whether a washer attaches on Supply reel table shaft (Fig. C10).

TOP VIEW

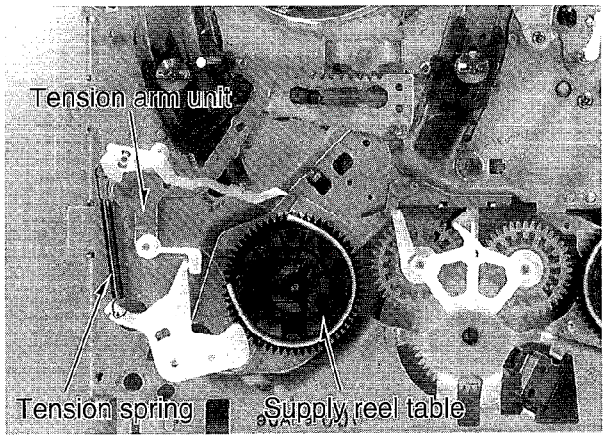


Fig. C8

BOTTOM VIEW

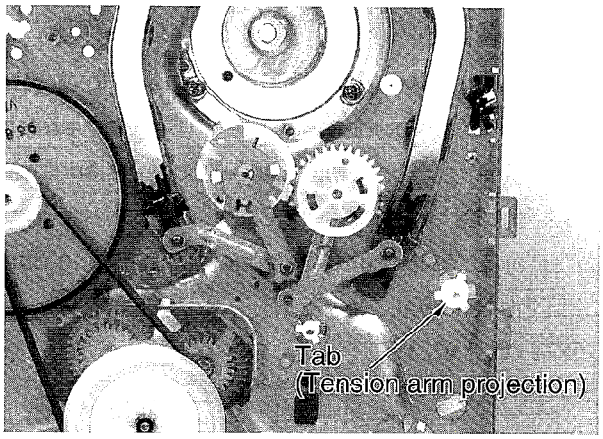


Fig. C9

TOP VIEW

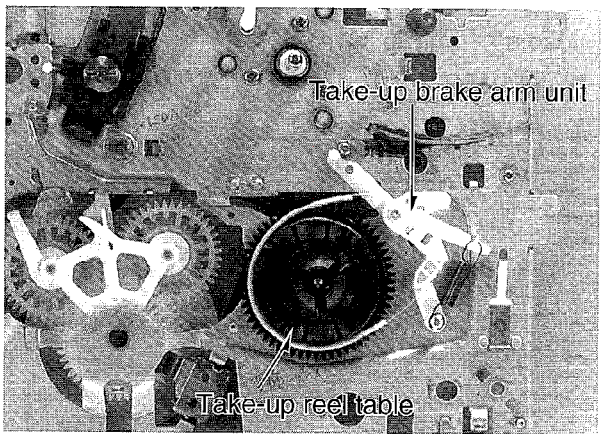


Fig. C11

SIDE VIEW

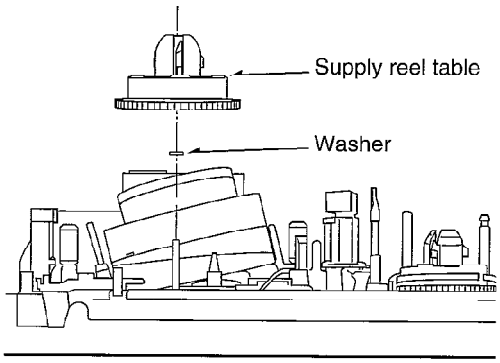


Fig. C10

8 Remove of Take-up brake arm unit and Take-up reel table

Unlock the tab of Take-up brake arm unit from the bottom of Chassis (Fig. C12). Remove Take-up brake arm unit and Take-up reel table (Fig. C11).

※ When remove Take-up reel table, be sure whether a washer attaches on Take-up reel table shaft (Fig. C13).

BOTTOM VIEW

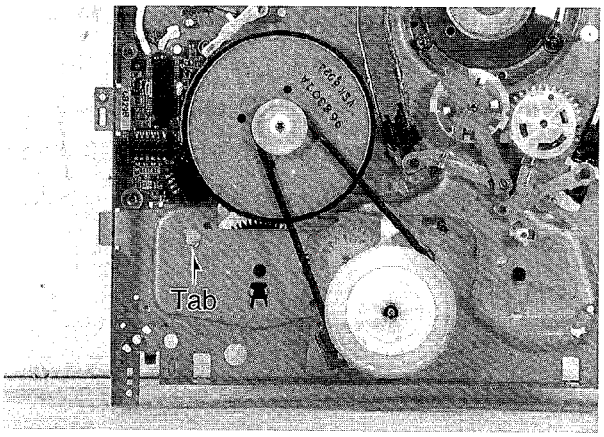


Fig. C12

SIDE VIEW

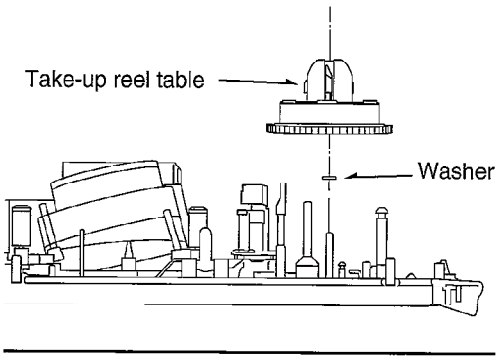


Fig. C13

9. Removal of Take-up & Supply loading arm
Unlock the tab and remove Take-up and Supply loading arm (Fig. C14).

BOTTOM VIEW

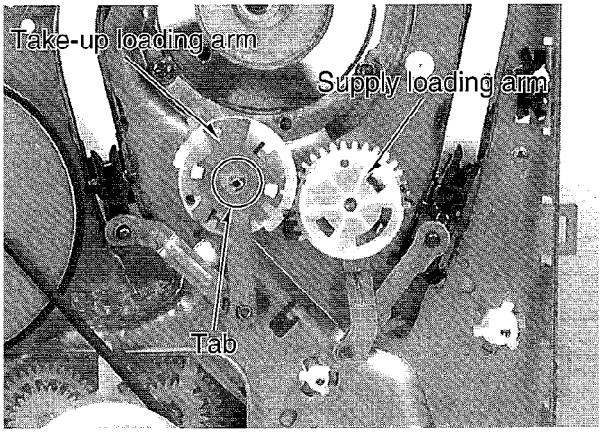


Fig. C14

10 Removal of Prism LED, Take-up & Supply shaft holder and Loading rack
Push the tab of Prism LED and remove Prism LED Remove Take-up and Supply shaft holder from the groove of Chassis and remove Loading rack (Fig. C15).

TOP VIEW

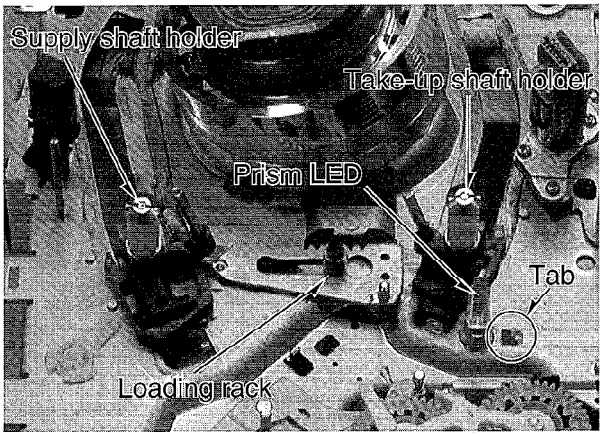


Fig. C15

11. Removal of Center clutch, Conversion gear spring, Conversion gear, Conversion lever B and Idler arm unit
Remove the Belt and the Cut washer (Fig. C16).
Remove Center clutch (Fig. C16) Conversion gear spring, Conversion gear, Conversion lever B and Idler arm unit (Fig. C17).

※ Pay an attention of Conversion gear spring during the removal.

BOTTOM VIEW

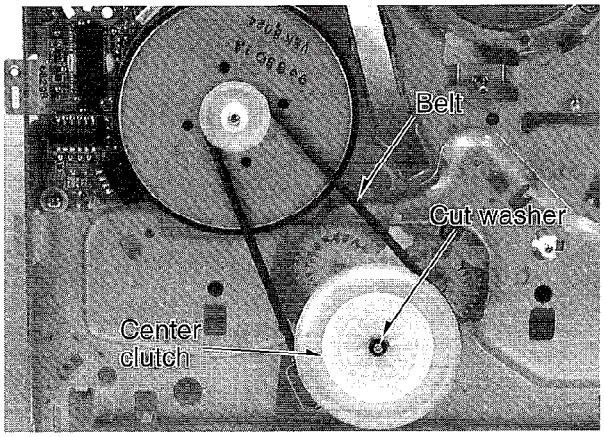


Fig. C16

BOTTOM VIEW

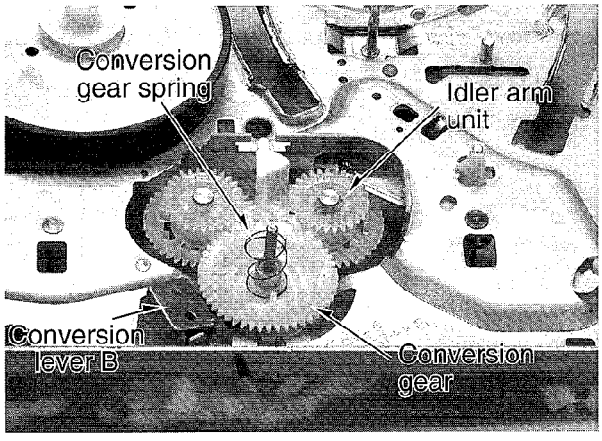


Fig. C17

12. Removal of Capstan unit

Remove 3 gold screws (Fig. C18).

Remove 2 gold screws on the bottom of Chassis (Fig. C19)

Keep moving SS brake arm and remove Capstan unit.

TOP VIEW

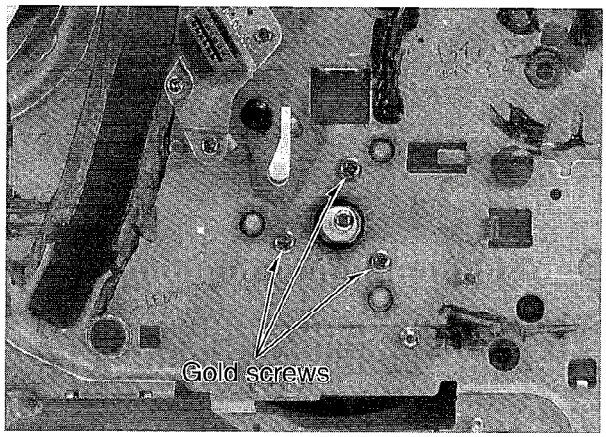


Fig. C18

BOTTOM VIEW

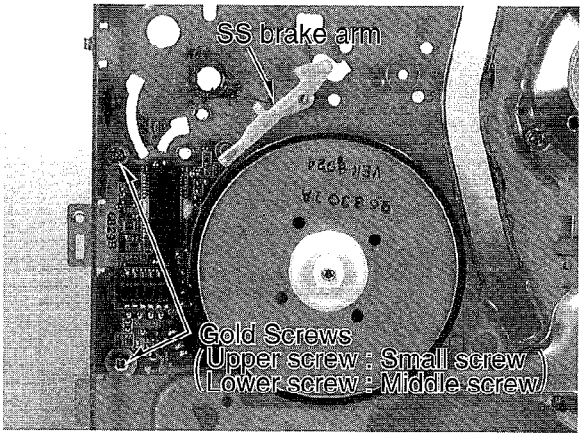


Fig. C19

13. Removal of Cylinder unit

Removal red screw (Fig. C20).

Remove 3 gold screws on the bottom of Chassis and remove Cylinder unit (Fig. C21).

TOP VIEW

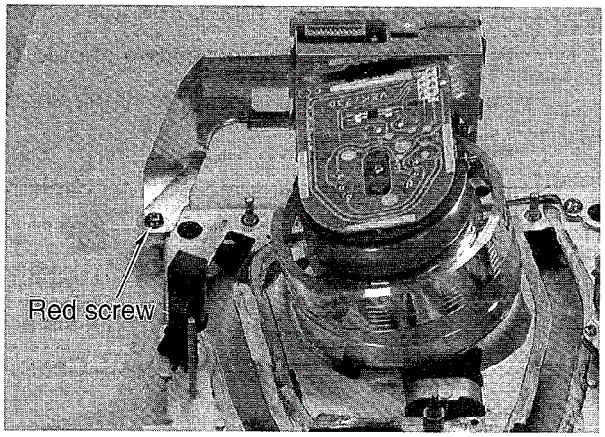


Fig. C20

BOTTOM VIEW

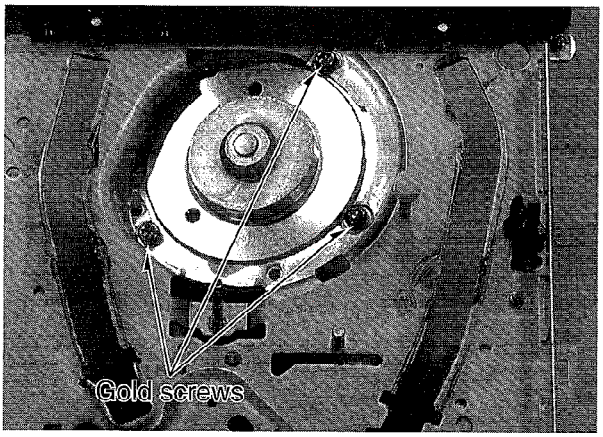


Fig. C21

4-2. Assembly and phase adjustment of mechanism

The gear phase alignment has been performed in the EJECT position and it is crucial for the Z Mechanism to operate correctly.

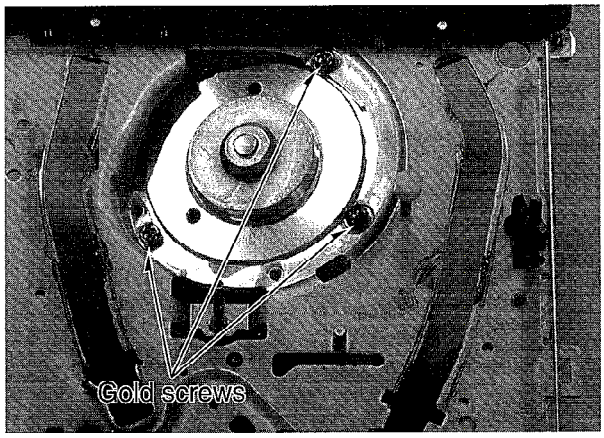
NOTE: In case of the parts replacement like Position switch, Mechanism position should be set to Eject position in order to fit the phase of Position switch

1 Assembly and phase adjustment of Mechanism

(1) Assembly of Cylinder unit

Cylinder unit should be fixed by 3 screws (GOLD) from the bottom side of Mechanism chassis and red screw on the top side of Mechanism Chassis (Fig. E1, E2).

BOTTOM VIEW



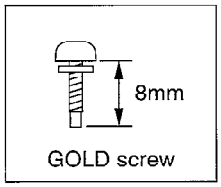
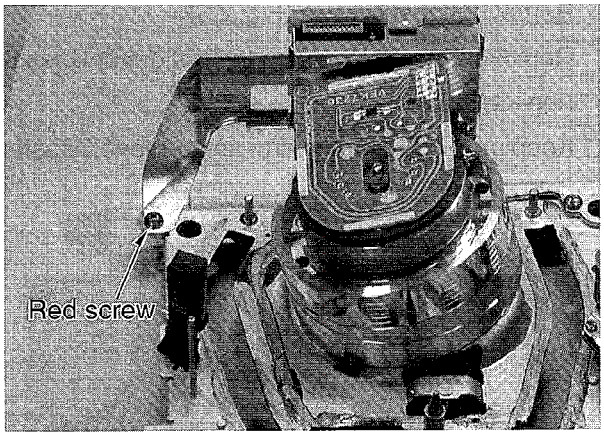


Fig. E1

TOP VIEW



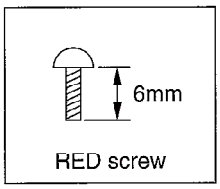
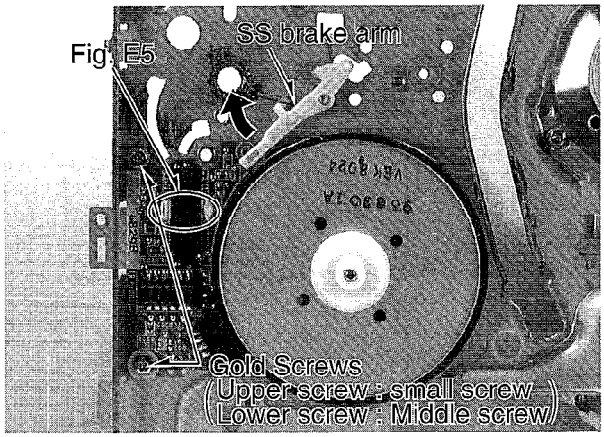


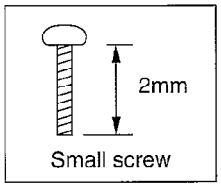
Fig. E2

(2) Assembly of Capstan unit

Move SS brake arm in the direction of arrow (see Fig. E3) and capstan unit should be fixed by 2 screws (GOLD) on the bottom side of Mechanism chassis and 3 screws (GOLD) on the top of Mechanism chassis (Fig. E3 E4)

BOTTOM VIEW





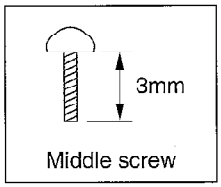
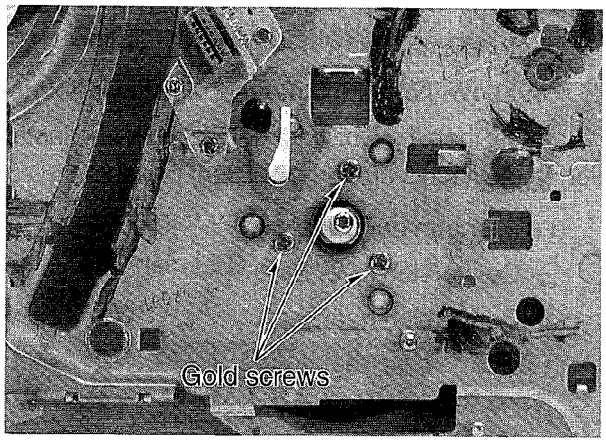


Fig. E3

TOP VIEW



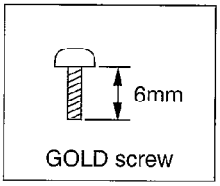


Fig. E4

NOTE: Replacement of Capstan unit and Procedure of applying the silicone grease.

REPLACEMENT OF CAPSTAN UNIT

In case of replacement of the Capstan Unit the Silicone grease have to be applied between the Mechanism chassis and the Drive IC by the following procedure.

Silicone grease No. VFK1301 for radiation of the Drive IC

Silicone grease is used for the radiation of the Drive IC. The heat occurred on the IC is radiated to the Mechanism chassis through the grease. In case of the incomplete radiation, the safety circuit operates depending on the rise of the temperature and it possibility stop the operation of the Drive IC

PROCEDURE OF APPLYING THE SILICONE GREASE

① There is a cut-out part at the Drive IC mounting position and the bottom of the IC can be seen from the cut-out part Apply the Silicon grease to whole the cut-out part of IC as shown in Fig. E5-1 so that the grease is piled 0 3–0 5 mm from the surface of the C B A

② Next, from the component side of the C.B A., apply the Silicon grease so that the grease is piled at the metal of the center of the IC as shown in Fig. E5-2.

Fig. E5-1. Apply the Silicon grease so that the grease is piled 0.3 0.5 mm from the surface of the C.B.A.

Fig. E5-2. Apply the Silicon grease at the metal of the center of the IC.

SIDE VIEW

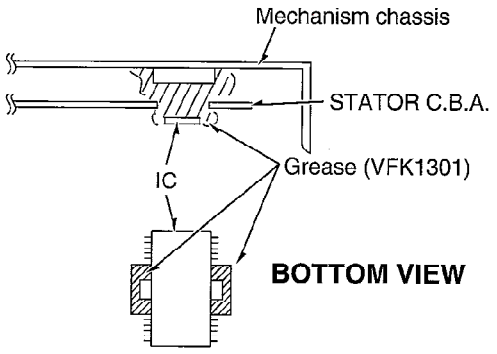


Fig. E5

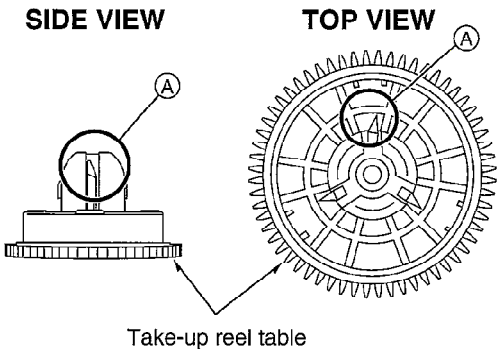


Fig. E11

(7) Assembly of Supply reel table and Tension arm unit

Install washer (Fig. E13) and Supply reel table. Insert Tension arm unit to Tension arm projection and hang Tension spring with Supply spring arm projection (Fig. E12).

※1 Pay an attention of Position of the Supply spring arm.

NOTE: The shape between portion A for Take-up reel table and portion B for Supply reel table is different.

Therefore, confirm the shape of portion A and B before mounting reel tables. If Take-up reel table has been confused with Supply reel table and they have been installed, the trouble of reel table rotation slip happens (Fig. E14).

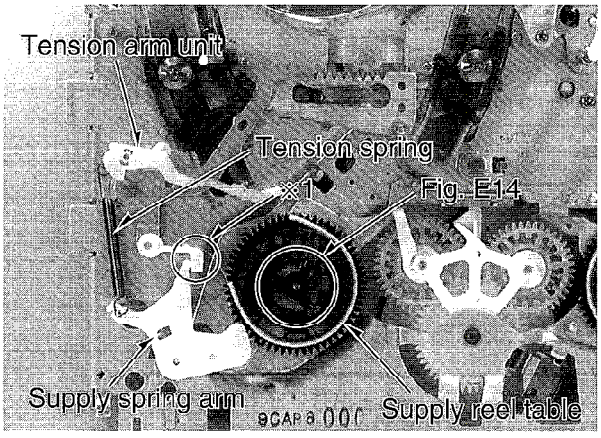


Fig. E12

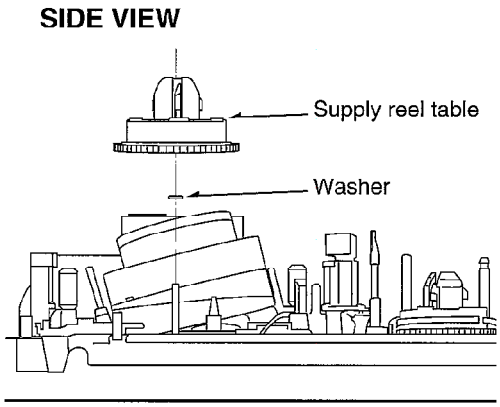


Fig. E13

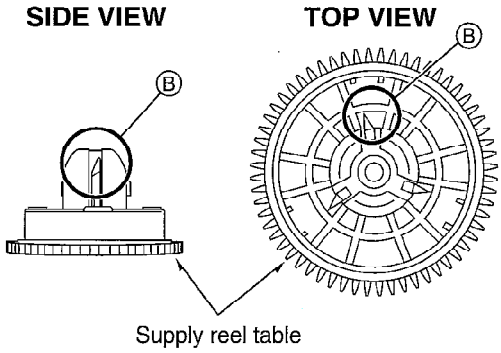


Fig. E14

(8) Assembly of Drive main lever arm

Install Drive main lever arm so that Drive main lever arm fits to the groove of Chassis.

And rotate Drive main lever arm to the clockwise in order to adjust the phase between the hole of the position fixture and the penetration hole of Chassis (Fig. E15).

TOP VIEW

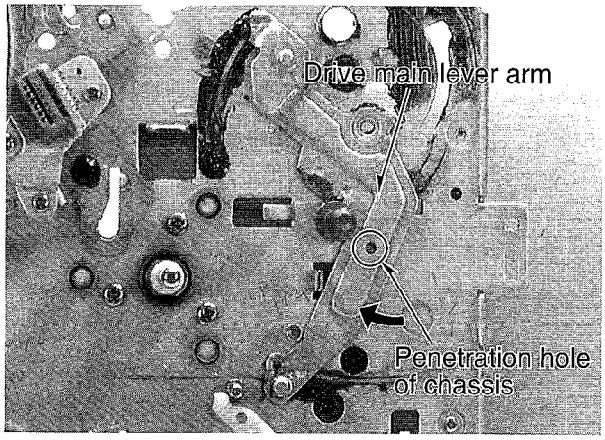


Fig. E15

(9) Assembly of Conversion lever A, P5 arm and Main lever

Install Conversion lever A and P5 arm (Fig. E16, E17).

Adjust the phase of Main lever so that Main lever fits the projection of Loading rack.

Main lever has to be locked at the projection of Chassis by 2 tabs of Prism LED (Fig. E16).

※ Conversion lever A, P5 arm, Supply brake arm unit and the projection of Take-up brake arm have to be installed to the groove under the Main lever (Fig. E18).

TOP VIEW

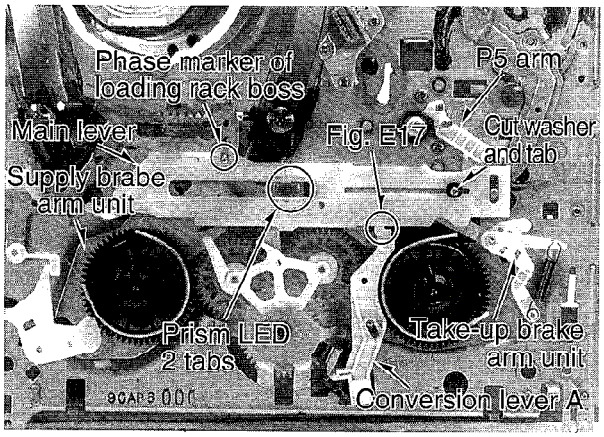


Fig. E16

TOP VIEW

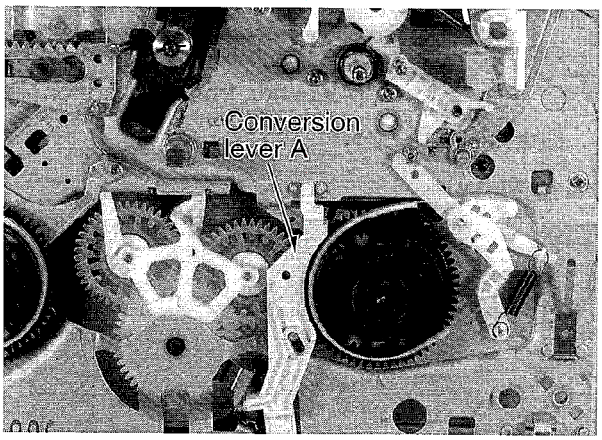


Fig. E17

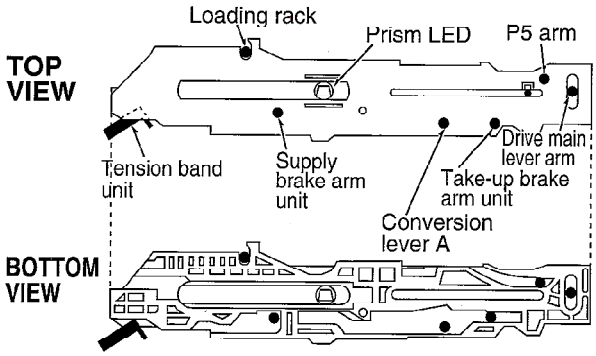


Fig. E18

(10) Assembly of Drive rack arm

Install Drive rack arm so that Drive rack arm fits the groove of Chassis and rotate it to the clockwise in order to fit the penetration hole of Chassis (Fig. E19)

TOP VIEW

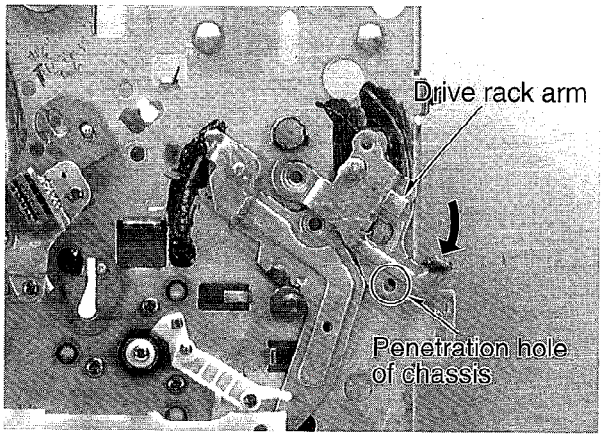


Fig. E19

(11) Assembly of Main cam gear

Install Main cam gear so that Main cam gear fits the penetration hole of Chassis (Fig. E20) and fix it by the snap washer from the bottom of Chassis (Fig. E21).

TOP VIEW

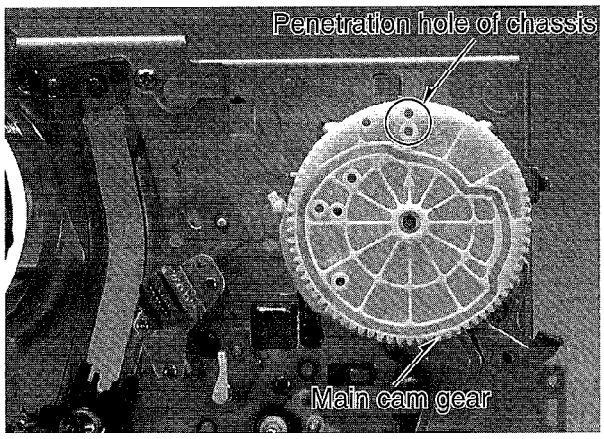
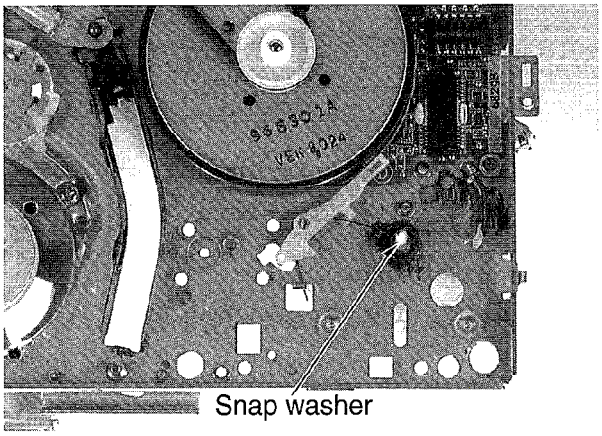


Fig. E20

BOTTOM VIEW



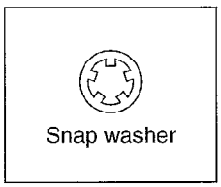


Fig. E21

(12) Assembly of Loading motor unit

Install Loading motor unit so that Loading motor unit fits the groove of Chassis (Fig. E22).

(13) Assembly of Pinch arm

Put Pinch arm together and install Opener space to fix Pinch arm (Fig. E22).

TOP VIEW

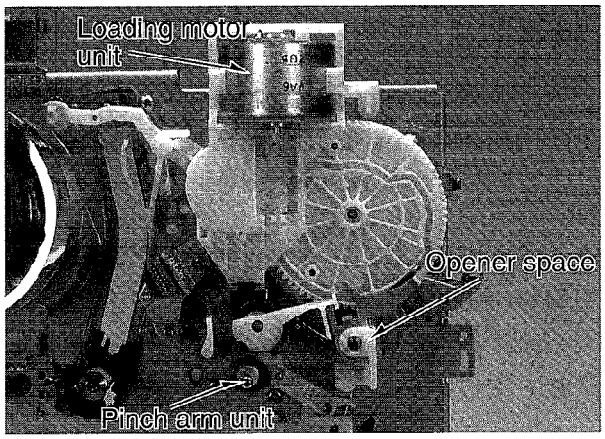


Fig. E22

4-3 Assembly of mechanism chassis

1 Assembly of Mechanism chassis

(1) Adjust the phase of Position switch in Main C B A..

Rotate Position switch until the click point. The projection of Position switch should be set to just above (Fig. F1)

TOP VIEW

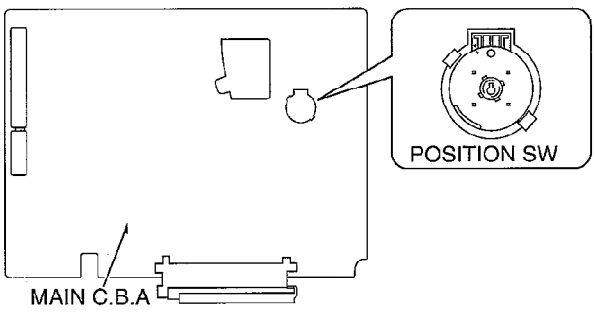


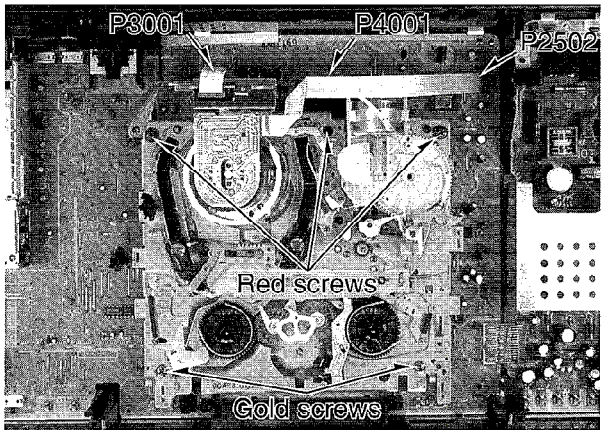
Fig. F1

(2) Assembly of Mechanism chassis

Put Mechanism chassis on Main C.B.A. and fix it by 5 screws (3 red screws and 2 gold screws).

Connect P3001, P2502 and P4001 (Fig. F2)

TOP VIEW



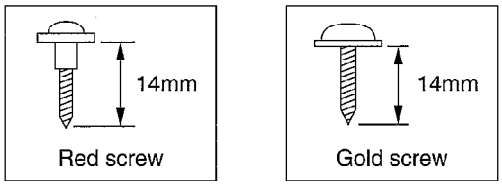


Fig. F2

※ The red screws has a gap among the chassis. Therefore be careful not to tighten too much.

2. Assembly of Cassette holder unit

(1) Assembly of Main shaft

Install Main shaft so that Main shaft fits the groove of Chassis (Fig. F3)

TOP VIEW

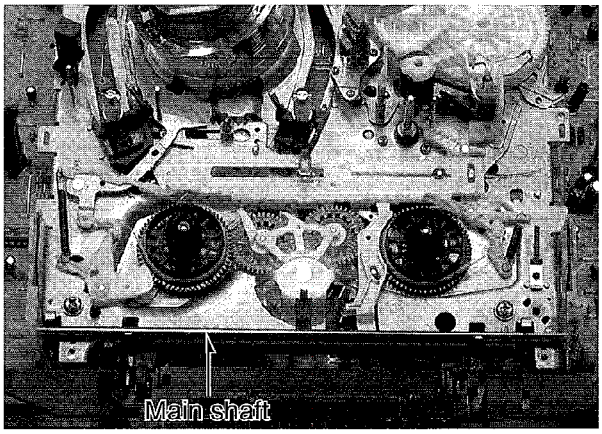


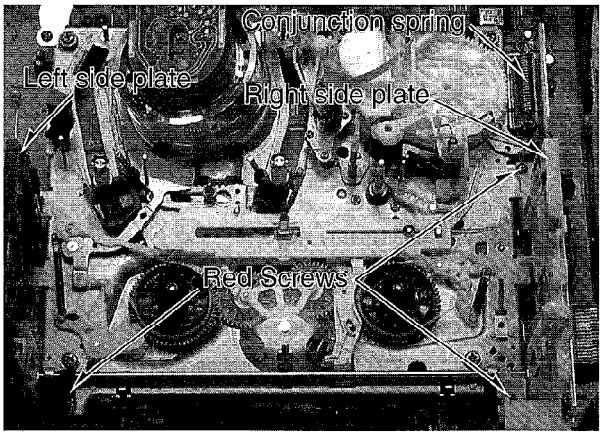
Fig. F3

(2) Assembly of Left & Right side plate

Install Left side plate so that Left side plate fits the groove of Chassis and fix it by the red screws.

After adjustment the phase of waper arm and Drive rack (Fig. F5), install Right side plate so that Right side plate fits the groove of Chassis and fix it by 2 red screws. Hang Conjunction spring on the projection of Drive rack arm (Fig. F4, F5).

TOP VIEW



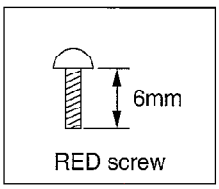


Fig. F4

SIDE VIEW

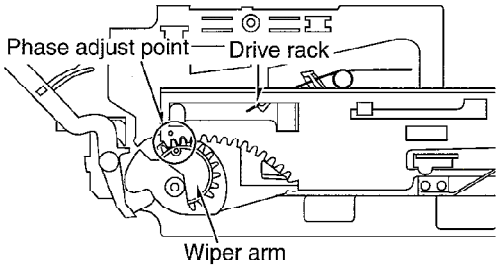


Fig. F5

TOP VIEW

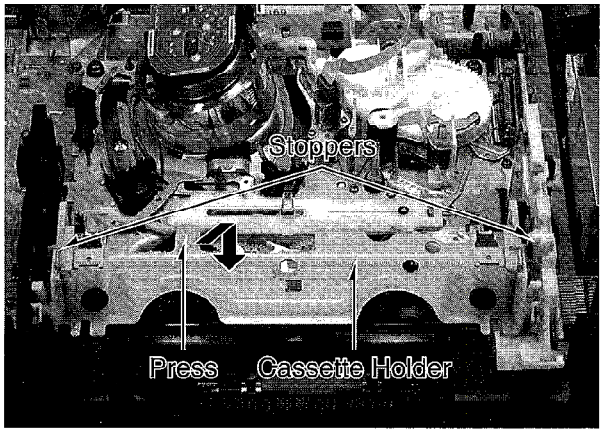


Fig. F6

(3) Assembly of Cassette holder

Install Cassette holder so that Cassette holder fits the groove of Waper arm installed in Main shaft (Fig. F6, F7).

TOP VIEW

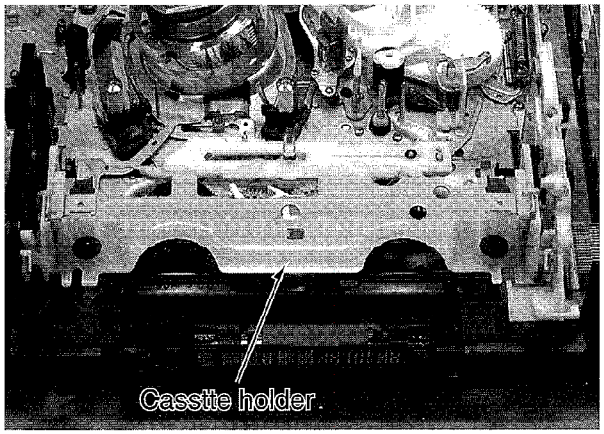


Fig. F7

(4) Assembly of Top plate

Install Top plate so that Top plate fits the groove of Left and Right side plate.

※ Fix Top plate by tightening screw when the tabs of Left and Right side plate broke (Fig. F8)

TOP VIEW

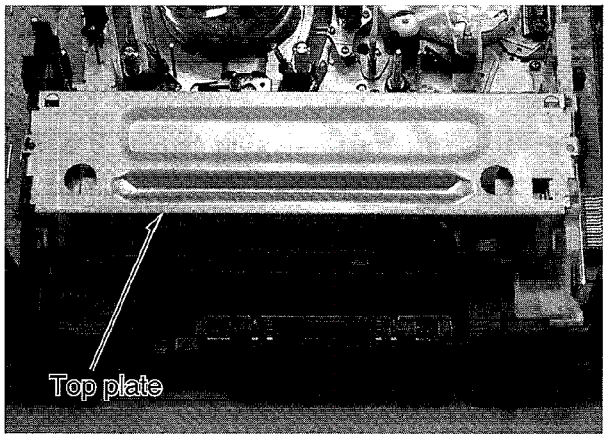
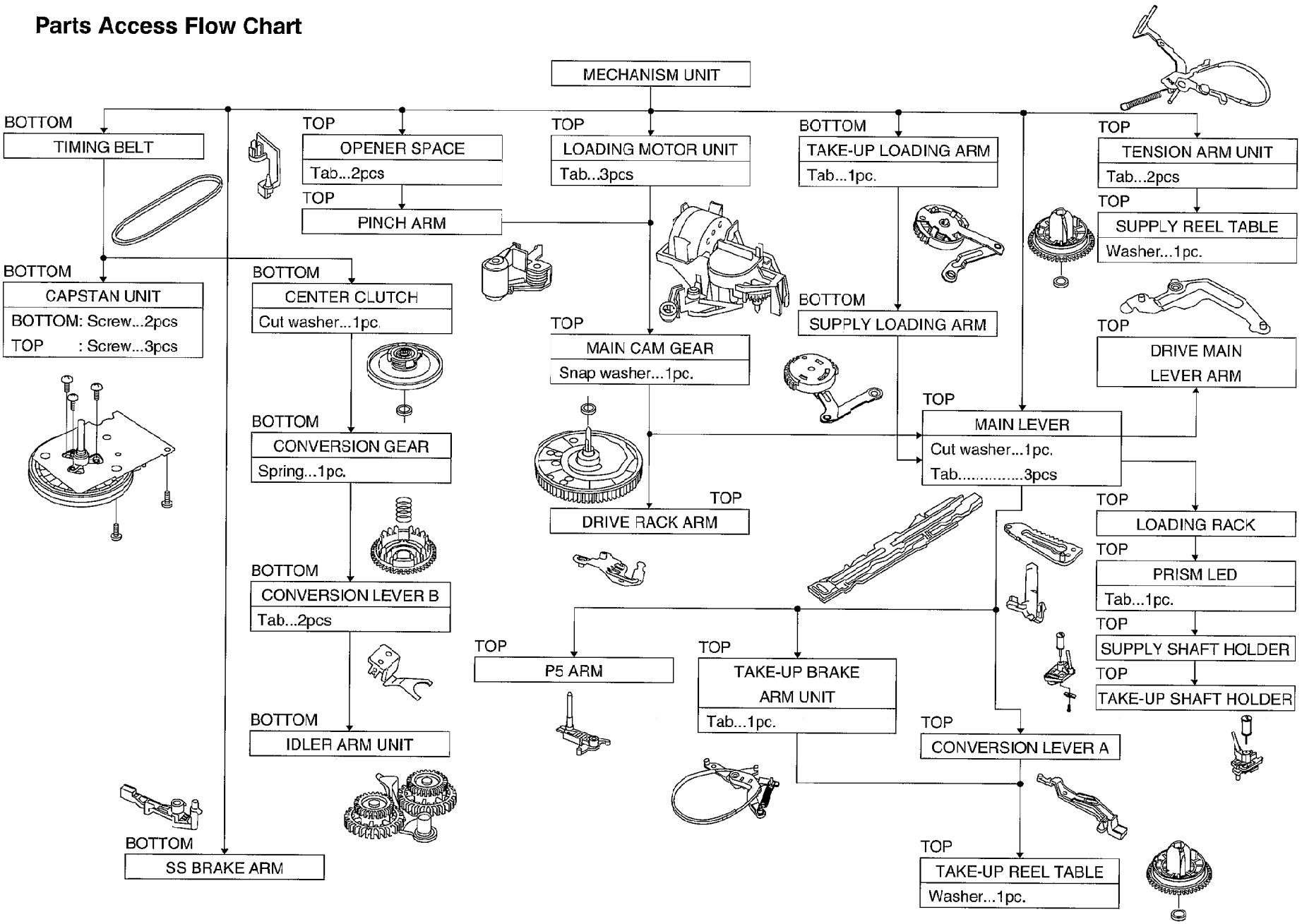


Fig. F8

(5) Install Front panel unit and Top panel

Parts Access Flow Chart



5. MECHANICAL ADJUSTMENT PROCEDURE

5-1. Tension post position adjustment

Equipment required: Hex. Wrench (VFK0326)
Specification: 50.5±1.5 mm

(1) Disconnect the AC plug.

(2) Remove the TOP PLATE.

(3) Turn the LOADING MOTOR until the loading completes.

(4) Adjust the hole of Tension Band Fastener by Hex Wrench until the distance between the Tension Post and the center of Supply reel table is 50.5±1.5 mm as shown in Fig. M1.

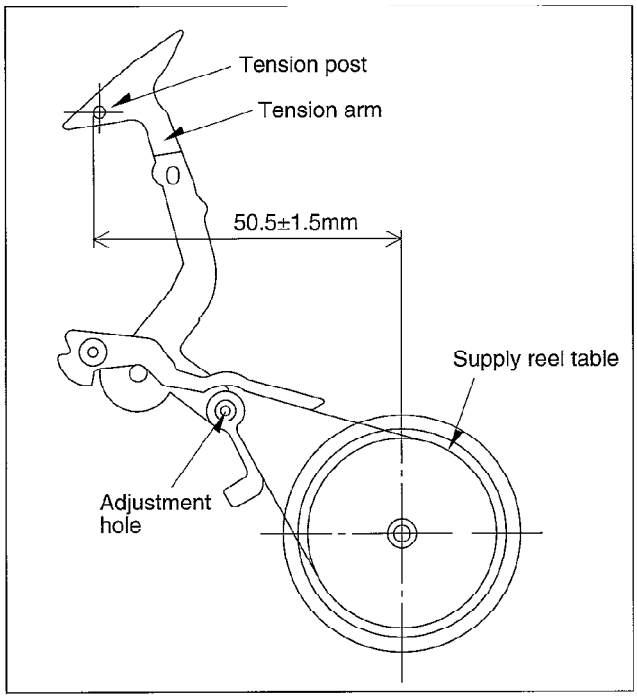


Fig. M1

5-2. Back tension adjustment

Equipment required:
Back Tension Meter (VFK0132)
VHS Cassette tape (180 minutes tape: PAL)
VHS Cassette tape (120 minutes tape: NTSC)
Specification: 22.5–27.5g

(1) Playback the cassette tape from the beginning and wait until the tape movement get the stabilization. (for approx. 10–20 seconds)

(2) Insert the Back Tension Meter into the path of a tape, and measure the back tension to be within specification as shown in Fig. M2.

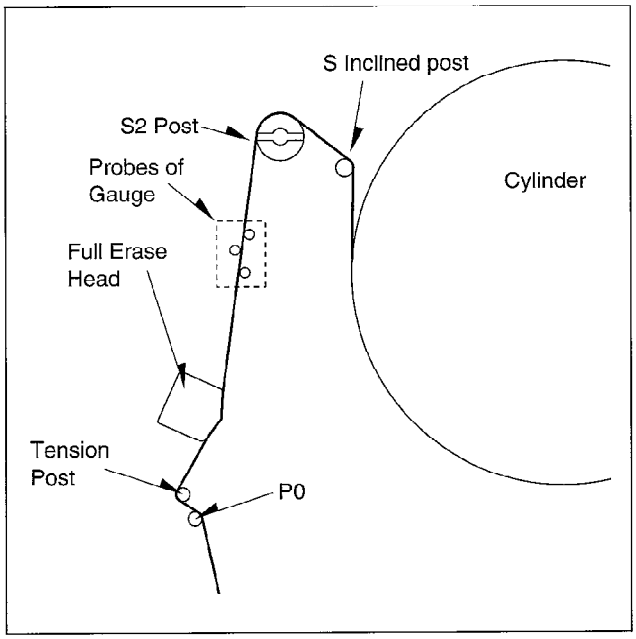


Fig. M2

(3) If it is out of specification, change the spring notch as shown in Fig. M3.

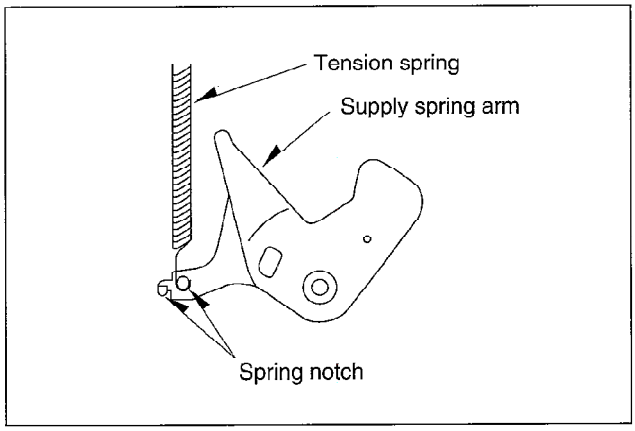


Fig. M3

5-3. P2 and P3 posts adjustment (PREADJUSTMENT)

Equipment Required:
Post Adjustment Screwdriver (VFK0329)

(1) Remove the Top Plate.

(2) Turn the Loading Motor until the unloading completes.

(3) Rotate the P2 and P3 Posts clockwise to the end. (Fig. M4)

(4) Rotate the P2 and P3 Posts twice counterclockwise. (Fig. M4)

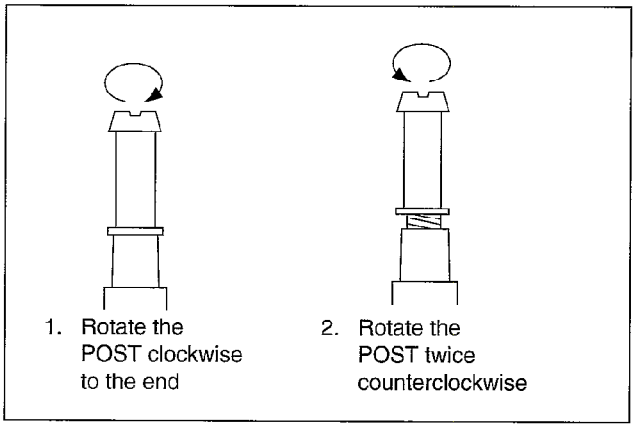


Fig. M4

(5) Playback the cassette tape and make sure that the edges of the tape are not curling at the bottom or top end of the P2, P3, and P4 Posts as shown in Fig. M5.

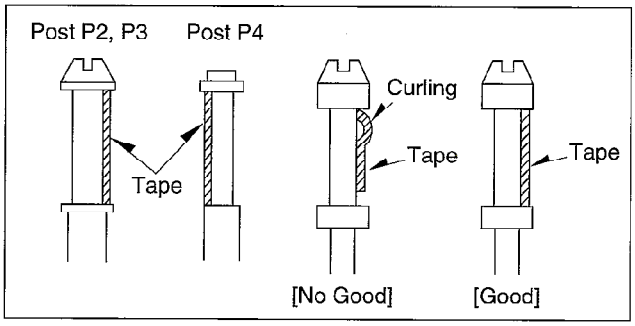


Fig. M5

(6) If the curling appears, readjusts the P2 and P3 Posts.

5-4. Tape interchangeability adjustment

Carry out the following procedures for Tape Interchangeability Adjustment to do it correctly and smoothly.

(1) P2 AND P3 POSTS ADJUSTMENT
(2) ADJUSTMENT OF P4 POST
(3) HEIGHT ADJUSTMENT OF A/C HEAD
(4) FINE-ADJUSTMENT OF A/C HEAD
(5) ADJUSTMENT OF X-VALUE (PREADJUSTMENT)
(6) FINE-ADJUSTMENT OF X-VALUE

If the Tape Interchangeability Adjustment is not perfect, repeat the above procedures from (1) to (6).

CAUTIONS: To make an Adjustment Mode for Tape Interchangeability, press the FF, REW and EJECT buttons simultaneously 3 times to set the Service Mode 2.

NOTE: Cleaning the Tape Transport path before adjusting of Tape Interchangeability. The detail portion is shown below.

P0 Post, Tension Posts, FE Head, P2 Post, Supply Inclined Post, Cylinder Unit, Take-up Inclined Post, P3 Post, A/C Head, P4 Post, Pinch Roller, Capstan Shaft, P5 Post. FE Head, Cylinder Unit, A/C Head and Capstan Shaft are more important parts and pay an attention to clean them.

5-4-(1). P2 AND P3 POSTS ADJUSTMENT

Equipment required:
Alignment Tape (PAL/SECAM: VFJ8125H3F)
(NTSC: VFM8080HQFP)
Post Adjustment Screwdriver (VFK0329)

(1) Connect the oscilloscope to the output of the Head Amp as shown in Fig. M6.

NOTE: To get a stable waveform of the Head Amp output (observation point TW3001 and TW2001 located on Main C.B.A.) on the oscilloscope, use the head switching pulse as a triggering signal as shown in Fig. M6.

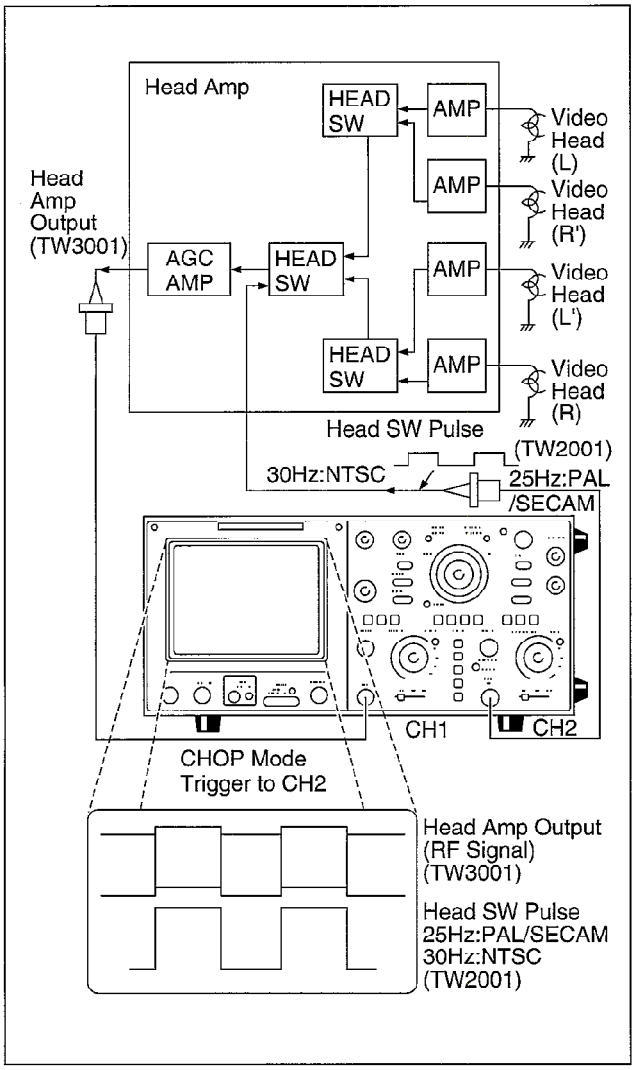


Fig. M6 Connect of Oscilloscope

(2) Playback the Alignment Tape.

(3) If the RF envelope appears like example "A" or "B" in Fig. M7, then adjustment of the tape guide post (P2: Entrance) is necessary.

(4) Adjust the tape guide post (P2) with the post adjustment screwdriver so that the RF envelope waveform at the entrance portion becomes flat as shown in Fig. M7 "C".

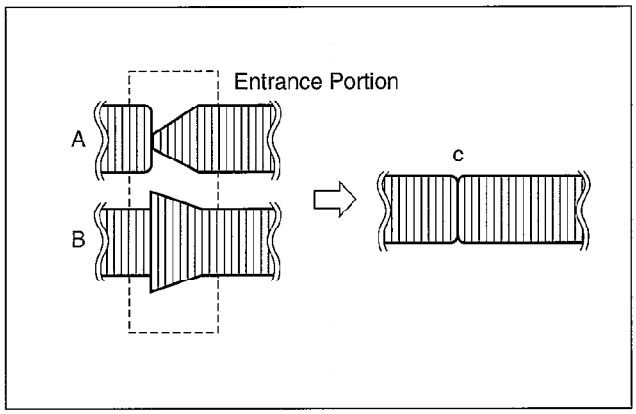


Fig. M7

(5) If the RF envelope appears like "D" or "E" in Fig. M8, then adjustment of the tape guide post (P3: Exit) is necessary.

(6) Adjust the tape guide post (P3) in the same manner as the P2 post so that the exit portion becomes flat as shown in Fig. M8 "F".

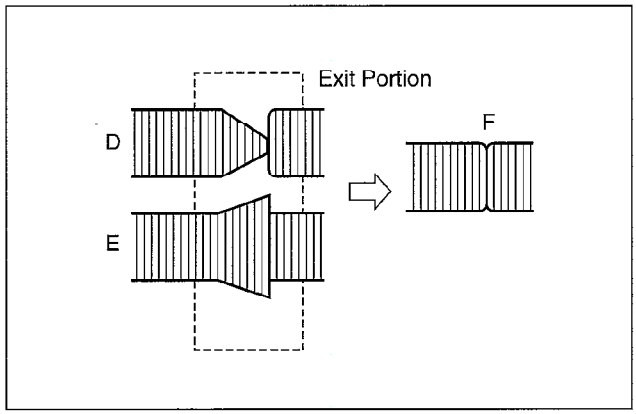


Fig. M8

(7) Keep pressing the tracking up/down (∧ or ∨) buttons on the remote controller unit. The output envelope should vary nearly parallel with other condition as shown in Fig. M9.

(8) Set the tracking control into center fix position by pressing the tracking up/down (∧ and ∨) simultaneously and adjust for maximum RF envelope, whilst being as flat as possible.

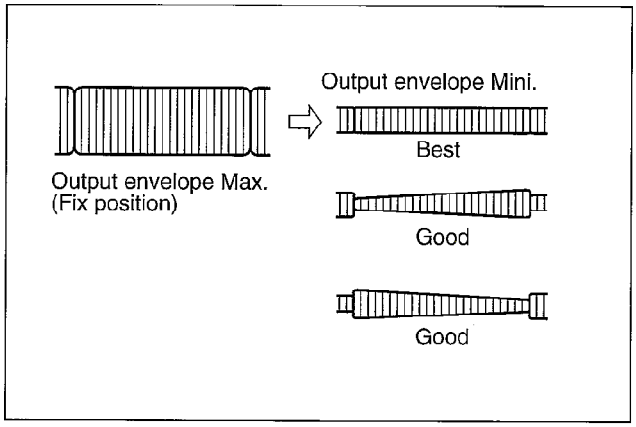


Fig. M9

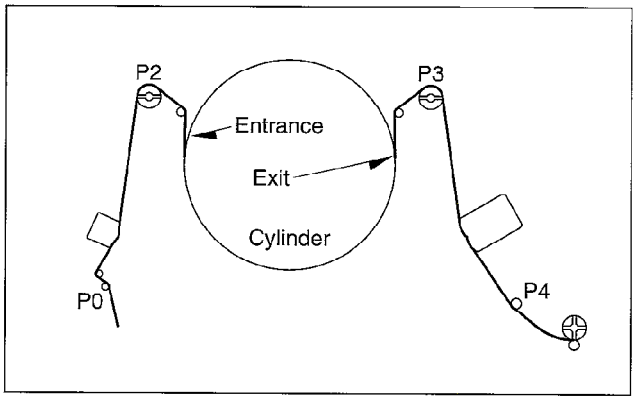


Fig. M10 Loading of Posts

5-4-(2). ADJUSTMENT OF P4 POST

(1) Install A/C Head on the Mechanism Chassis by one screw.

(2) Playback the Alignment Tape.

(3) Rotate the screw (A) or (B) until the wrinkle appears on the lower edge of tape at P4 Post.

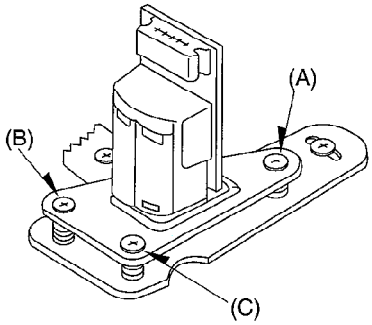
(4) Rotate the screw (A) or (B) until the wrinkle just disappears on the lower edge of tape at P4 Post.

(5) Connect the oscilloscope to audio output terminal.

(6) Rotate the screw (C) until audio signal is maximized.

NOTE: 1. The relation between the rotation direction of screws (A) and (B) and the condition of wrinkle on the lower edge at P4 Post as shown in Fig. M11.

2. Make sure that there is not the inclined wrinkle between P4 Post and Pinch Roller.



	SCREW (A)	SCREW (B)
So wrinkle appears on the lower edge of tape	COUNTER CLOCKWISE	CLOCKWISE
So wrinkle disappears on the lower edge of tape	CLOCKWISE	COUNTER CLOCKWISE

Fig. M11

5-4-(3). HEIGHT ADJUSTMENT OF A/C HEAD

<When moving the A/C Head up>

(1) Rotate the screw (A) counterclockwise until the wrinkle appears on the lower edge of tape at P4 Post.

(2) Rotate the screw (B) counterclockwise until the wrinkle just disappears on the lower edge of tape at P4 post.

(3) Rotate the screw (C) counterclockwise until the audio signal is maximized.

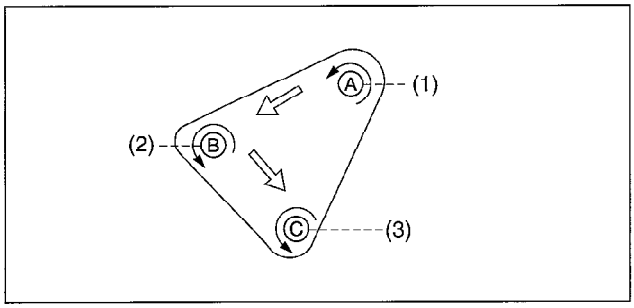


Fig. M12

<When moving the A/C Head down>

(1) Rotate the screw (B) clockwise until the wrinkle appears on the lower edge of tape at P4 Post.

(2) Rotate the screw (A) clockwise until the wrinkle just disappears on the lower edge of tape at P4 post.

(3) Rotate the screw (C) clockwise until the audio signal is maximized.

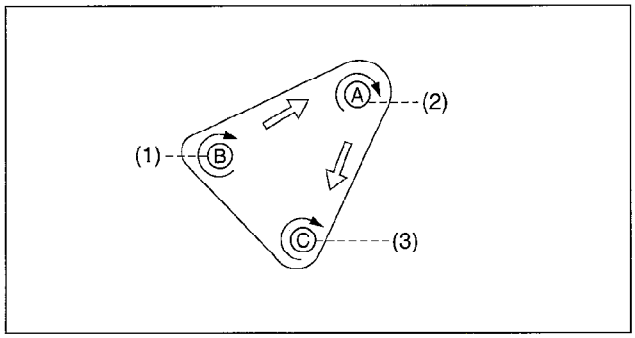


Fig. M13

5-4-(4). FINE-ADJUSTMENT OF A/C HEAD

(1) Connect the oscilloscope to the output of the Head Amp as shown in Fig. M6.

(2) Playback the Alignment Tape.

(3) Make sure that the condition of the wrinkle at P4 Post. If the condition of the wrinkle is out of specification, P4 Post adjustment has to be performed as follows.

Turn the screw (A) counterclockwise until the wrinkle appears on the lower edge of tape at P4 Post.

Turn the screw (A) clockwise until the wrinkle disappears on the lower edge of tape at P4 Post.

(4) Turn the screw (C) until the audio signal is maximized.

NOTE: Make sure that the audio output does not increase when push the upper and lower edges of tape around A/C Head.

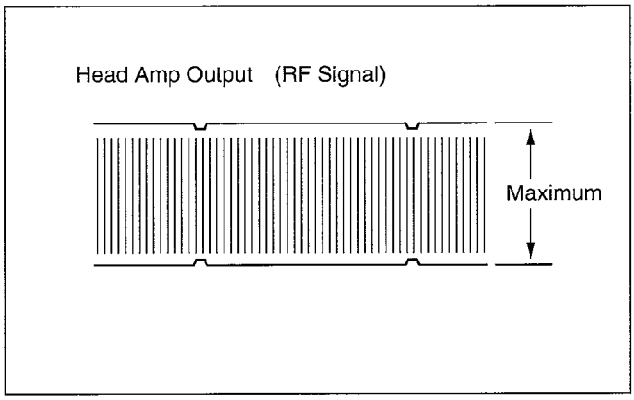


Fig. M14

5-4-(5). ADJUSTMENT OF X-VALUE (PREADJUSTMENT)

Equipment required:
Fine Adjustment Gear Drive (VFK0330)
Specification: Less than 15 msec.

(1) Connect the oscilloscope to the audio output and the video output. Both output signals should be fixed by the external trigger.

(2) Playback the Alignment Tape and set the tracking control into center fix position.

(3) Adjust A/C Head position by the Fine Adjustment Gear Driver (VFK0330) to meet the signal fault portion of the audio output and the video output signals (Less than 15 msec.).

(4) After meeting the signal fault portion, adjust A/C Head position by the Finc Adjustment Gear Driver (VFK0330) until the video envelope is maximized.

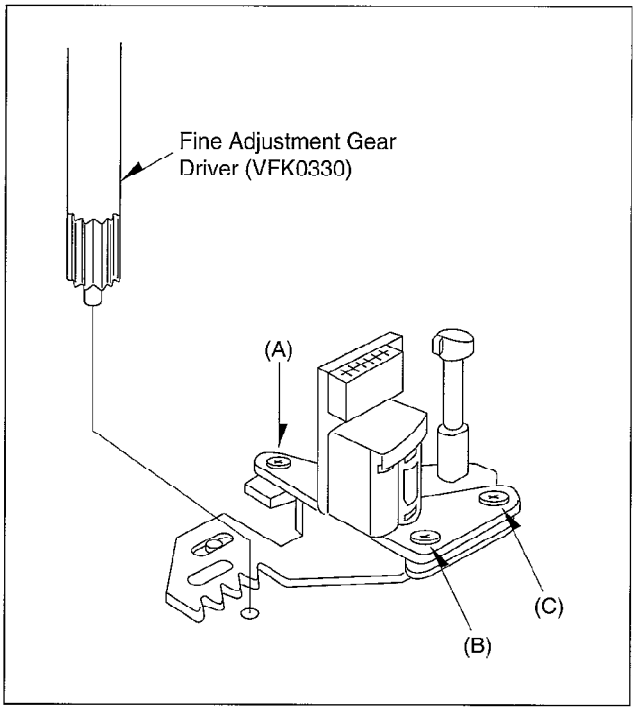


Fig. M15

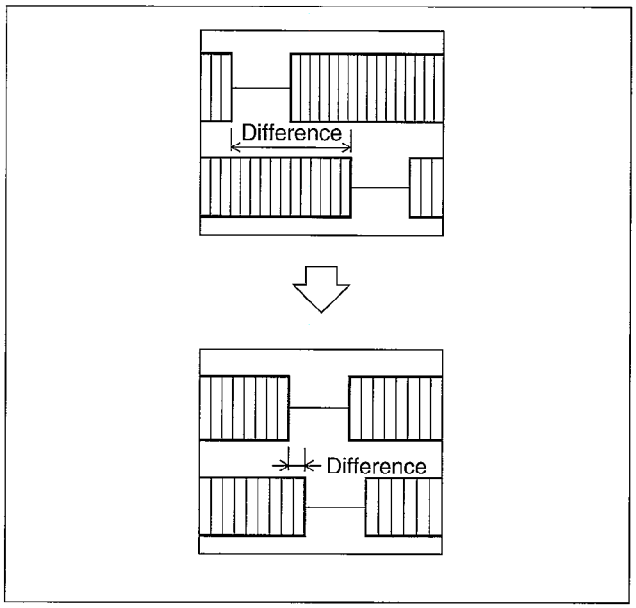


Fig. M16

5-4-(6). FINE-ADJUSTMENT OF X-VALUE

Equipment required:
Fine Adjustment Gear Drive (VFK0330)

(1) Connect the oscilloscope to the audio output and the video output. Both output signals should be fixed by the external trigger.

(2) Playback the alignment tape and set the tracking control into center fix position.

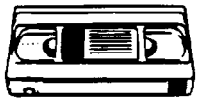
(3) Adjust A/C Head position by the Fine adjustment Gear Driver (VFK0330) until the video envelope level is maximized at the tracking center fix position.

NOTE: During X-Value Fine Adjustment, in case the video envelope level became 0, Preadjustment of X-value should be adjusted again due to it is possibility to vary the X-value adjustment.

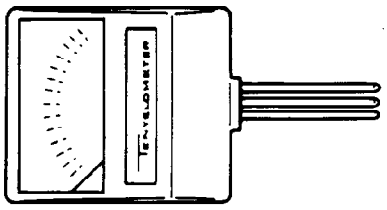
Servicing Fixtures & Tools

VFJ8125H3F
PAL VHS Alignment Tape

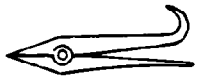
VFM8080HQFP
NTSC VHS Alignment Tape



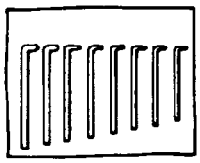
VFK0132
Back Tension Meter
(Tentelometer, Made in U.S.A.)



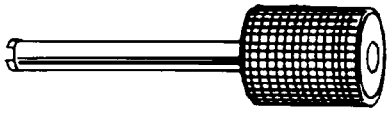
VFK0335
Retaining Ring Remover
(3mm/4mm)



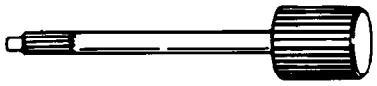
VFK0326
Hex. Wrench Set
(0.7, 0.9, 1.2, 1.5, 1.6, 2.0, 2.4, 3.0mm)



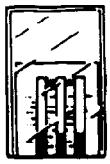
VFK0329
Post Adjustment Screwdriver



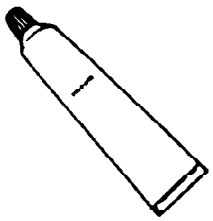
VFK0330
Fine Adjustment Gear Driver



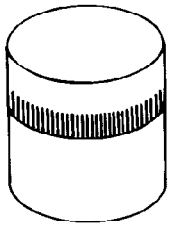
VFK27
Hand Cleaning Stick



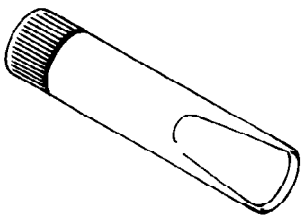
VFK1024
Morlytone Grease



VFK1298
Floil Grease



VFK1301
Silicone Grease



6. SELF-TEST INDICATION DISPLAY

This VTR has a self-diagnosis and display function. If the VTR detects trouble during installation or during use, one of the following fault indication codes will automatically appear in the VTR display. Fault indication codes are displayed in the form of a single English letter followed by two numbrs, as for example "H01".

Note: 1. The indication "U" is displayed on the FIP while power remains on.

2. Otherwise, the indication "H" or "F" is displayed on the FIP, and the power is automatically turned off

   When the power is turned on again, the fault indication code will disappear and the unit will retrun to normal display mode (either clock or counter is displayed).

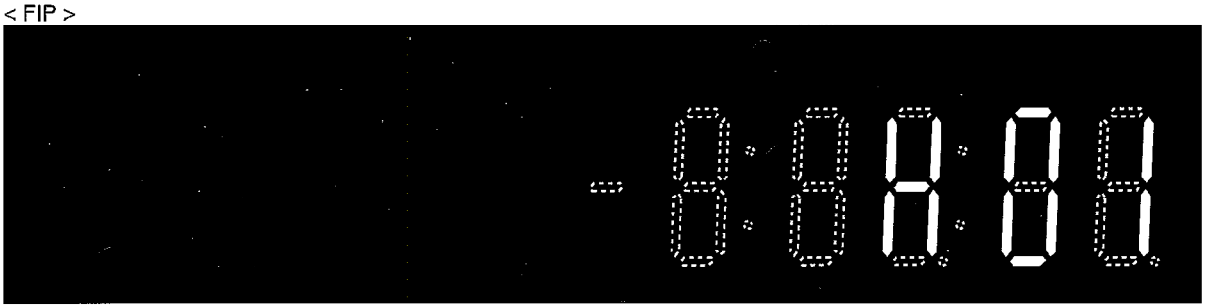
3. This fault indication code will be stored in the Timer microprocessor even with the AC plug disconnected.

   The two-digit number portion of the stored fault indication code can be redisplayed in the FIP's "second" display portion (the last 2 digits on the light) by placing the unit is Service Mode Number 2 when turning on Service Information Display as for example "01" or "02" etc.

   If a second error occurs, only the most recent error will be displayed and stored.

4. To erase the stored fault indication code data, Press FF, REW and EJECT buttons for 5 seconds.

< FIP >



INDICATION	CAUSE	REMEDY/CHECK
U 10	Dew formation.	Wait until the indication disappears.
U 11	Cylinder clogs during the play mode.	Cleaning the cylinder.
H 01	After cylinder lock is detected, the cylinder does not start rotating again even after tape unloading.	Check the cylinder motor drive circuit.
H 02	Cassette tape is not wound up during tape unloading except Eject mode.	Check the capstan motor drive circuit.
F 03	Mechanism locks during mode transition except Eject mode.	1. Check the loading motor drive circuit. 2. Check the mechanism phase alignment. 3. Check the mode switch.
F 04	Mechanism locks during tape unloading.	1. Check the loading motor drive circuit. 2. Check the mechanism phase alignment.
F 05	Cassette tape is not wound up during tape unloading in Eject mode.	1. Check the capstan motor drive circuit. 2. Check the Supply/Take-up reel pulse.
F 06	Mechanism locks after tape unloading in Eject mode.	1. Check the loading motor drive circuit. 2. Check the mechanism phase alignment for cassette holder unit.
F 07	During recording mode recording signal is less than the normal condition.	Protection of the overcurrent flowing in transistor which produce the power supply for recording mode.
F 09	No communication of the main serial (between the system control and FIP driver control).	Check the system control microprocessor.

Fig. T1 Self-Test indication Display

7. SERVICE INFORMATION DISPLAY

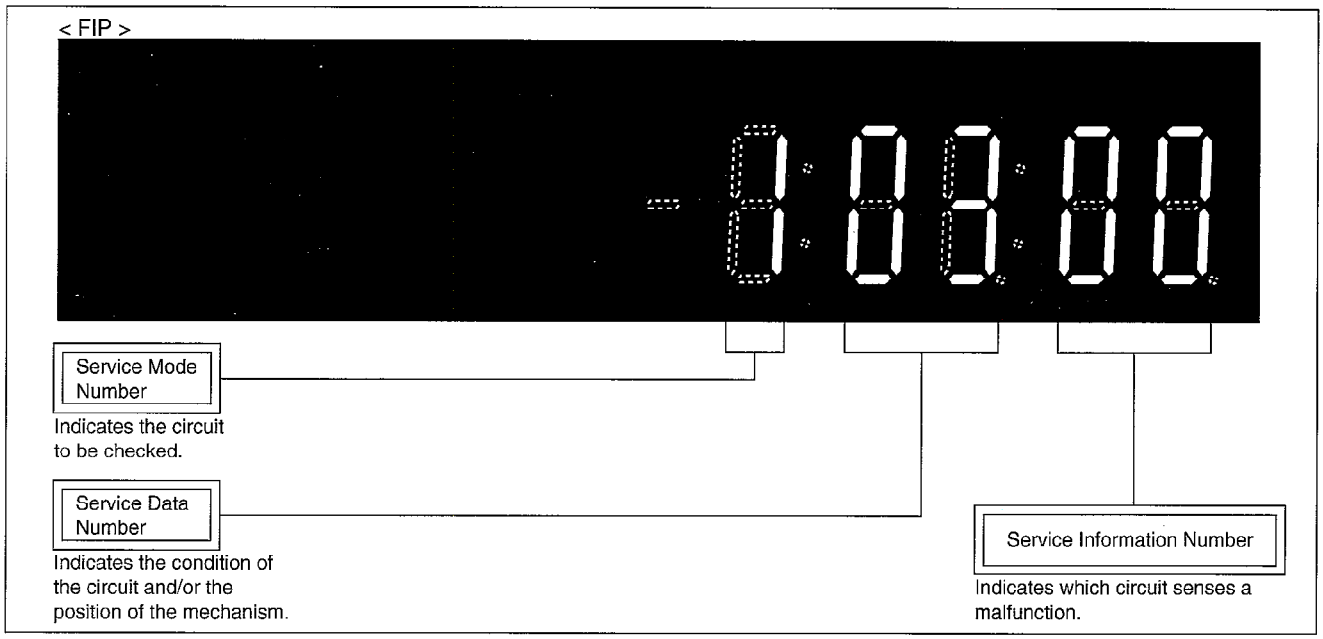

< FIP >
Service Mode Number
Indicates the circuit to be checked.
Service Data Number
Indicates the condition of the circuit and/or the position of the mechanism.
Service Information Number
Indicates which circuit senses a malfunction.

Fig. D1 Service Information Display

7-1 Purpose of Service Information Display

This information aids trouble shooting by indicating the source of the malfunction. The service mode number & service data number are used by the technician during repair while the service information can be used by consumer to diagnose malfunctions allowing the technician to provide a more accurate repair cost estimate and reduce repair time.

7-2. Turning on Service Information Display

Press FF, REW and EJECT buttons simultaneously.

In the Service Information Display, there are four digits divided into 3 functions.

The first digit indicates which of the 7 service modes that the unit is currently in.

MODE 1: Checks tape protection circuit.

MODE 2: Checks tape transport mechanism.

MODE 3: Checks mode switching operation.

MODE 4: Checks control buttons.

MODE 5: Checks capstan motor.

MODE 6: Checks cylinder motor.

MODE 7: Checks loading/unloading operation.

The second and third digits are service data which indicate the condition of the circuit or mechanism being checked.

The forth digit is the service infromation display. it is to be used by the consumer to help determine the source of a malfunction. The service information display operates independently of the service modes and stores the fault indication in memory for as long as AC power is not supplied.

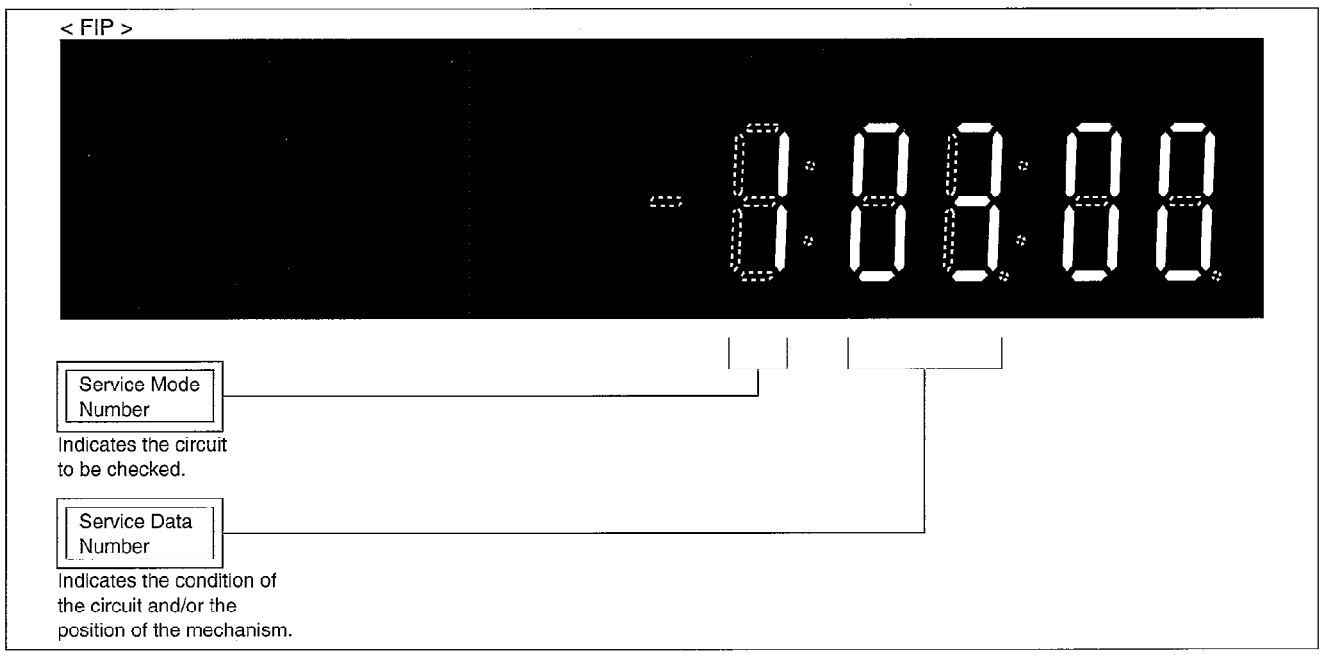

< FIP >
Service Mode Number
Indicates the circuit to be checked.
Service Data Number
Indicates the condition of the circuit and/or the position of the mechanism.

Fig. D2 Service Mode Number and Service Data Number on F.I.P.

7-3. Use of Service Modes

(1) Turn on Service information Display.

(2) To change Service Modes Press FF, REW and EJECT buttons simultaneously.

(3) Mode 0: Not used.

(4) Mode 1: Checks that the sensor LED, Supply & Take-up sensor circuits checks the circuits by blocking the light from the sensor LED to either or both Supply & Take-up Sensors. When the light is blocked to both sensors, "00" should be indicated on the service data number.
When the light is blocked to the supply sensor, "01" should be indicated.

(5) Mode 2: Checks the mode switch circuit while indicating mechanism position.
Service Data Numbers indicate the position of the mode switch and there by the mechanism position.

(6) Mode 3: Checks that mode switch circuit operations have been completed.
Service Data Number should indicate "00" after each mechanism operation is completed.

(7) Mode 4: Checks the operation circuit.
Indicates if SYSTEM CONTROL IC receives the operating commands from the mode buttons and/or remote controller.

(8) Mode 5: Checks the capstan motor circuit.
Indicates if the SYSTEM CONTROL IC has received the command to rotate the capstan motor.

(9) Mode 6: Checks the cylinder motor circuit.
SYSTEM CONTROL IC has received the command to rotate the cylinder motor.

(10) Mode 7: Checks the loading/unloading operation.
The loading motor rotates for loading operation when the "PLAY" button is pressed.
The loading motor rotates for unloading operation when the "STOP" button is pressed.
This mode can be displayed indefinitely until the OPERATE button is pressed.

<NOTE> Refer to Fig. D5 for details of Service Data Numbers.

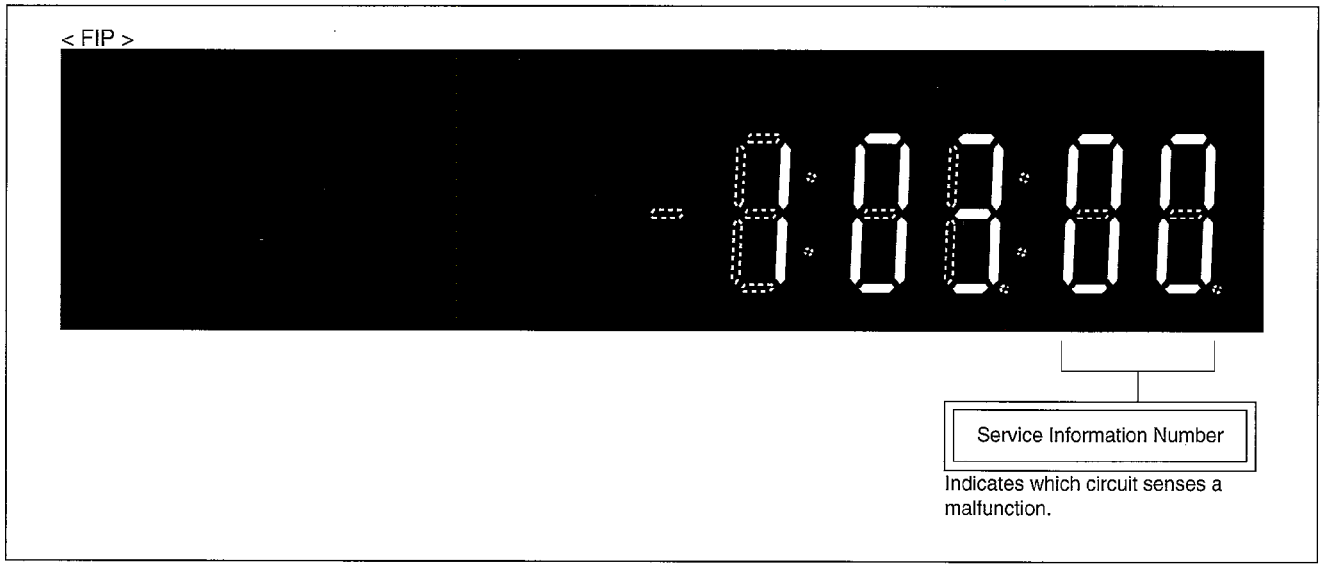


Fig. D3 Service Information Number on F.I.P.

7-4. Service Information Number

Refer to Fig. D4 for details of Service Infromation Number.

NOTE: The Service Information Number display is independent of the service mode display. The Service Information Number will be stored as long as AC power is not supplied (If can be displayed in the Service Mode 2.)

If a second error occurs, only the most recent error will be displayed.

Service Information Number	Malfunction
00	Normal condition (No problem)
01	Cylinder stop
02	Tape reel stop
03	Stop at position other than 04 or 06
04	Stop during unloading
05	Fault capstan rotation
06	Stop during Cassette-in/Eject operation
09	Fault of the main serial communication (Between system control and FIP driver)

Fig. D4 Detail Service Information Number

7-5. Test Mode

When the test terminals are shorted during turning off condition, the following operation will be performed after AC power is applied. Test Mode Information will be displayed on FIP insted of lincar counter.

(1) Power will be turned on automatically when AC power is applied.

(2) The direct operation of buttons are able to be performed.

(Examle) PLAY⟷REC, REC⟷EJECT

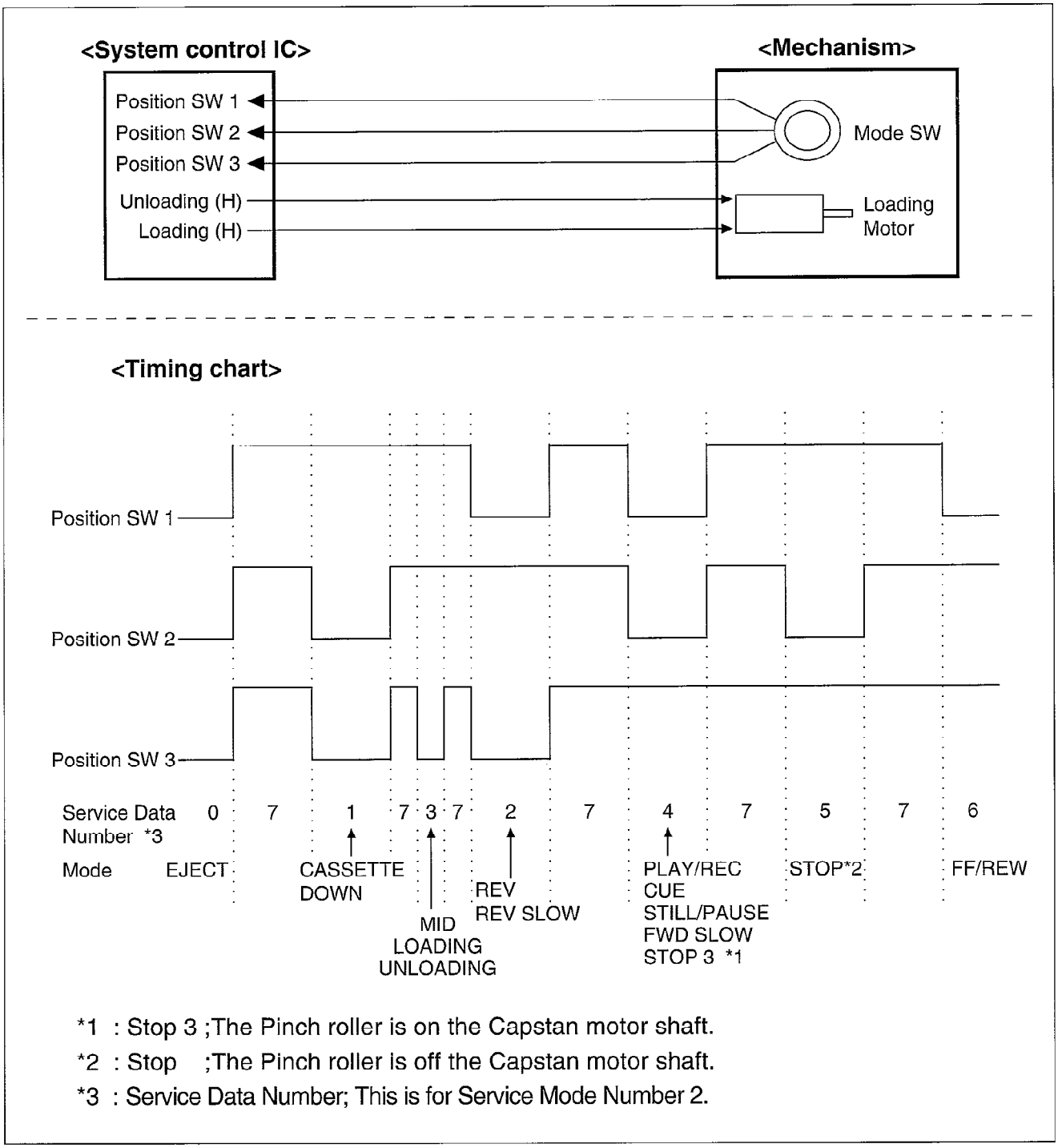
Service Mode Number	Note for checking Service Data Numbers	Service Data Numbers	Indication	Remarks
1	—	00	No light detected at either sensor	Tape not required.
		01	Tape beginning Light to Supply photo sensor is blocked.	
		02	Tape end Light to Take-up photo sensor is blocked.	
		03	Light detected at both sensors.	
2	—	00	EJECT	Tape required *1. STOP3: Pinch roller is on Capstan motor shaft. *2. STOP: Pirtch roller is off Capstan motor shaft.
		01	Cassette down	
		02	REV, REV SLOW	
		03	Loading/Unloading	
		04	PLAY, REC, STILL, PAUSE, CUE, FWD SLOW, STOP3*1	
		05	STOP*2	
		06	FF/REW	
		07	Intermediate position	
3	Disregard service data displayed until mechanism operation is completed. Then the display should indicate "00".	00	Any display other than "00" indicates a fault in the mode switch circuit or system.	Tape required.
4	Display only when the operating button is pressed.			Tape not required.
5	Left digit only, disregard Right digit display.	8 1 Left Right Digit Digit	8, 9, u, A, —, n, L and no display indicate that the Capstan motor "PLAY" command received by System control microprocessor.	Tape required. If a symbol other than those listed is displayed, a mulfunction in that circuit is indicated.
	Right digit only, disregard left digit disoaly.	8 7 Left Right Digit Digit	1, 2, 3, 4, 5, 6, 7 indicate that the Capstan motor "CUE, FF, FWD SLOW" commands received by system control microprocessor.	
	Right digit only, disregard left digit display.	8 — Left Right Digit Digit	8, 9, u, A, —, n, L and no display indicate that the Capstan motor "Reverse, REW, Reverse Slow" commands received by system control microprocessor.	
6	Left digit only, disregard Right digit display.	1 0 Left Right Digit Digit	1, 3, 5, 7, 9, A, n and no display indicate that the cylinder motor "ON" command received by system control microprocessor.	Tape required. If a symbol other than those listed is displayed, a mulfunction in that circuit is indicated.

Fig. D5 Service Data Display and Indication

7-6. Timing chart from Mode SW to System control IC

System control IC senses the mechanical position through the Mode SW.

Fig. D6 shows the timing for service mode number 2.



*1 : Stop 3 ;The Pinch roller is on the Capstan motor shaft.

*2 : Stop ;The Pinch roller is off the Capstan motor shaft.

*3 : Service Data Number; This is for Service Mode Number 2.

Fig. D6 Timing chart of Mode SW

8. SYSTEM CONTROL CIRCUIT & MECHANISM CONTROL CIRCUIT

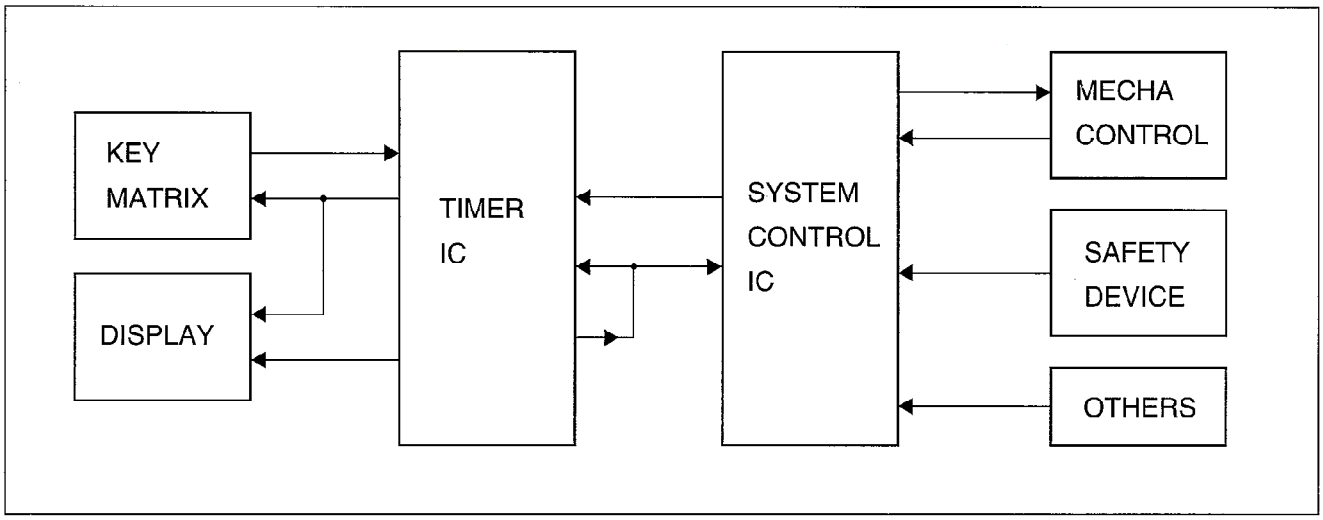


Fig. S1 Overall Block Diagram of System Control Circuit

8-1. STOP3 Specification

(1) The STOP3 is the playback stand-by mode.

(2) The unit is put into the STOP3 position after tape loading if the cassette tape does not have a clear leader tape.

(3) If the unit is in the STOP3 position when the power is switched off (included the Timer stand-by mode), the unit goes to the STOP position.

(4) If the cassette is in the unit when the power is turned on, the unit goes to the STOP3 position.

(5) When the cassette tape has clear leader tape, the unit is in loading mode after winding up the clear leader tape by Take-up reel at the cassette down position and the unit goes to STOP3 position.

8-2. Stand-by in the STOP3 position

(1) The unit goes to STOP3 position when the Stop mode is selected during the Play or Rec operations. The unit then loosens the tape tension by performing the Reverse Slow.
The Reverse Slow corresponds to the FG 40 pulses of the capstan (irrespective of SP/LP modes). The cylinder continues to rotate.

(2) After about 10 minutes in STOP3 mode, the unit shifts to the Stop position and the cylinder continues to rotate.

(3) After about 10 minutes in STOP mode, the unit stops the cylinder rotation.

8-3. Supply and Take-up Sensors

Supply and Take-up photo transistors are used to sense the beginning and end of a tape. The tape has transparent leaders at the beginning and end.

When these transparent leaders enter the tape transport path, they allow infrared light from the sensor LED to reach either one of the tape end sensors (photo-transistor).

If the Take-up end sensor detects the light, the microprocessor SYSTEM CONTROL IC places the VCR in the Stop mode and then performs a short Cue.

If the Supply end sensor is triggered, the microprocessor activates the Stop mode and the Rewind mode. The Rewind mode continues until the Take-up end sensor detects the end of the tape. The tape beginning is detects by a low signal at SYSTEM CONTROL IC Take-up photo terminal. The tape end is detected by a low signal at SYSTEM CONTROL IC Supply photo terminal.

If the light is received at both sensors at same time, the cassette is ejected.

<Operation after detecting the beginning and the end of tape>

Mode	Detection of the beginning	Detection of the end
Power on→off	Short CUE	Short REW
Cassette in	Short CUE	Short REW
Loading	Short CUE	Short REW
FF/CUE	——	Auto REW
REW/REV	Short CUE	——
PLAY, REC	——	Auto REW
SLOW	——	Auto REW
Timer REC	——	Power off

Both ends of tape detection (tape cut, no cassette),

(1) Cassette in: The cassette tape is ejected

(2) Other mode: The unit goes to Stop mode and it is impossible to operate except EJECT key.

(3) Timer REC: Power is turned off after short CUE is performed

8-4. Safety Tab Switch

A recorded video cassette can be protected against accidental erasure by breaking off the tab on the cassette. The cassette can now only be used for playback. To be able to record on the cassette, cover the hole with adhesive tape. If the safety tab on the cassette has been removed, Safety Tab Switch is off (open) and high signal is supplied to SYSTEM CONTROL IC Safety Tab terminal. The SYSTEM CONTROL IC will not go into the recording mode and automatically places the VCR in the playback mode.

8-5 Dew Sensor

If excessive moisture or condensation is present inside the machine (an internal humidity of more than 98%) the unit will stop if running. Until the moisture level decreases only the Eject mode will operate. To sense the humidity, a dew sensor is used. The sensor is a special variable resistor which change resistance with ambient humidity.

The sensor ranges in resistance from about 5K ohm at 90% humidity to about 50K omh at 98% humidity. Normally, the voltage across the sensor is low because of its low resistance.

But if moisture condenses inside the unit, the SYSTEM CONTROL IC voltage of Dew terminal increases to indicate a Dew condition.

Tape	Mode	Dew sensor ON	Dew sensor OFF
OUT	Power	Compulsory Power on	Power off
	Dew indication	Indicate "d" and "U10"	No indication
	Cylinder	Rotating *1	Stop
	Key operation	Not possible *2	Possible
	Cassette in	Immediately a cassette is ejected after it goes to cassette down position.	Possible
IN	Power	Compulsory Power on	Power off
	Dew indication	Indication "d" and "U10"	No indication
	Cylinder	Rotating *1	Stop
	Key operation	Not possible *2	Possible
	Cassette condition	A cassette goes to down position and is in stand-by mode.	Stand-by mode at STOP3 position.

*1: When the cylinder locks in dew mode, it will be released until dew sensor is truned off.

*2: The keys which do not relate to the tape running operation, are able to be used.

Dew sensor on: During Dew formation is detected and 80 minutes after completion of Dew detection.

Dew sensor off: 80 minutes later after copmletion of Dew detection.

8-6. Setting time for each mode

The time is set on each mode in order to protect tape and capstan driver. When the setting time is over, the mode is gone to the next mode.

Mode	Setting time	Switching mode
STILL, PAUSE	Approximately 5 minutes	STOP
CUE/REV lock	Approximately 10 minutes	PLAY
SLOW, F ADV	Approximately 10 minutes	STOP

8-7. Operation of short CUE

Short CUE stops when the Take-up photo sensor detects the black portion of the tape.

However its sensor does not detect the black portion within 4.0±1.0 sec., the mode except Power on/off and Eject modes will be abe to be operated after the unit stops. This is same as the timer over oeration of the reel lock.

8-8. Loading/Unloading Mechanism lock

Loading and unloading times are set, and in case the mechanism locks during loading or unloading operation within the defined time, the unit detects the mechanism lock and loading motor reverses or stops.

Loading operation lock: Cassette tape is unloaded and ejected within 5 seconds.

Unloading operation lock: Power is truned off within 5 seconds.

8-9. Cassette loading/unloading lock

(1) Mechanism locks during the cassette in operation.

① Cassette tape is ejected approximately 2 seconds later when the mechanism locks during the cassette in operation.

② In case mechanism locks during eject operation, cassette tape is inserted and power is turned off approximately 2 seconds later.

③ When Mechanism locks during cassette in operation, power is turned off approximately 2 seconds.

In case the mechanism lock is released on thc way and cassette is ejected, the unit continues the normal operation.

(2) Mechanism locks during the eject operation.

① Cassette tape goes to cassette down position approximately 2 seconds later and power is turned off when mechanism locks during eject operation.

② Mechanism locks during cassette down operation, power is turned off.

8-10. Reel lock operation

When the Suuply or Take-up reel mechanism locks during the tape running, the following operation is performed.

FF/REW : Unloading and loading. The unit goes to CUE/REV mode.

PLAY/CUE/REC : Unloading till the cassette down position and loading. The unit goes to STOP3 position.

RVS PLAY/REV : Unloading till the cassette down position and loading. The unit goes to STOP3 position.

The reel pulse cycle is started to count after the mechanism mode is fixed.

In case the counted pulse cycle exceeds the defined value, the unit goes to STOP mode due to judge that lock of reel mechanism is detected.

<The value of reel lock detection time>

NTSC/SP mode

Mode	Speed (Ratio)	Time (S)
PLAY	±1	3.5
CUE/REV	±5	1.6

PAL/SP mode

Mode	Speed (Ratio)	Time (S)
PLAY	±1	3.5
CUE/REV	±5	1.6

The reel lock time in FF/REW mode is 800msec.

When the tape speed is less than 0.23m/s, reel lock is judged.

8-11. Cylinder lock

<Start rotation>

When the cylinder neither start rotating nor go to the stability rotation within 5 seconds, it is unloading under keeping the mode. In case the cylinder starts operating and stability rotation, the mechanism goes to STOP3 position.

If it is not possible, Power is turned off and cylinder trouble "H01" is displayed.

<During rotation>

The head switching pulse is supplied to the cylinder when the cylinder starts the stable revolution. In case the head switching pulse comes to the cylinder within 0.5 seconds, the cylinder lock is judged and the following operation is activated.

Timer REC: Power off

PLAY, REC: STOP

8-12. Mode transition

The relation between the present mode and operation key is shown in the following table.

PRESET MODE	OPERATION KEY							
	P SW	EJECT	STOP	REW	FF	PLAY	PAUSE	REC
P-OFF	P-ON	EJECT	——	——	——	PLAY	——	——
EJECT	P-OFF	——	——	——	——	——	——	——
STOP	P-OFF	EJECT	——	REW	FF	PLAY	——	REC
REW	P-OFF	EJECT	STOP	REV	FF	PLAY	——	——
FF	P-OFF	EJECT	STOP	REW	CUE	PLAY	——	——
REV	P-OFF	EJECT	STOP	——	CUE	PLAY	STILL	——
CUE	P-OFF	EJECT	STOP	REV	——	PLAY	STILL	——
PLAY	P-OFF	EJECT	STOP	REV	CUE	——	STILL	——
STILL	P-OFF	EJECT	STOP	REV	CUE	PLAY	PLAY	REC PS
REC	P-OFF	——	STOP	——	——	——	REC PS	*1
REC/PS	P-OFF	——	STOP	——	——	——	REC	——

*1: VISS WRITE

Pressing two keys simultaneously, the key operation is going to be ineffective.

In case the unit goes to CUE/REV lock mode by pressing FF/REW key lightly during Play mode, CUE/REV mode will be returned previous mode when FF/REW key is pressed more than 0.7 seconds.

8-13. Power on reset

When the power is turned on, the unit is going to reset and the following datas are cleared.

(1) Position switch data

(2) Operation mode data

(3) Prohibition flags

In case the mechanism is in cassette down position, tape slag is removed as the initial operation and the unit goes to STOP3 position.

8-14. Linear time counter operation

The counter value will be gone up/down by counting control pulse. As for NTSC system during Play/Rec mode, counter value goes up/down every 30 pulses. As for PAL system during Play/Rec mode, counter value goes up/down every 25 pulses.

8-15. Tape speed in CUE/REV mode

	NTSC	PAL
Standard	9 times	11 times

8-16. Automatic functions

(1) Automatic Power on

① Under power off, when a cassette tape is inserted, power is turned on automatically and cassette tape is loaded.

② Under power off and a cassette tape has been inserted, when PLAY key is pressed, power is turned on automatically and goes to PLAY mode.

(2) Automatic play

When a cassette tape removed safety tab is loaded, the mode goes into Play mode.

(3) Automatic rewind

When tape running is reached to the end of tape, automatically goes to Rew mode and stops when tape running will be reached to the beginning of tape.

In case of Timer recording, short Rew is performed for 2 seconds and power is turned off when tape running is reached to the end of tape.

(4) Power off and Eject

Under power off and a cassette tape has been inserted, when Eject key is pressed, a cassette tape is ejected and power is turned off

8-17. CUE/REV lock mode

When FF/REW key is pressed lightly (less than 0.7 seconds) during Play mode, unit goes into CUE/REV mode. To release CUE/REV mode, FF/REW key should be pressed more than 0.7 seconds.

8-18. FR (Forward/Reverse) search mode

When FF/REW key is pressed during FF/REW mode, unit goes into CUE/REV mode.

To release CUE/REV mode, FF/REW key have to be pressed.

8-19 FF/REW speed

Maximum tape speed is approximately 3.0 m/s during the stable running.

8-20 FF/REW time

The tape running from the beginning to the end of T-120 type (E-180 type) cassette tape is able to be completed within 150 seconds.

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